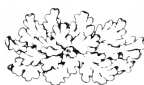




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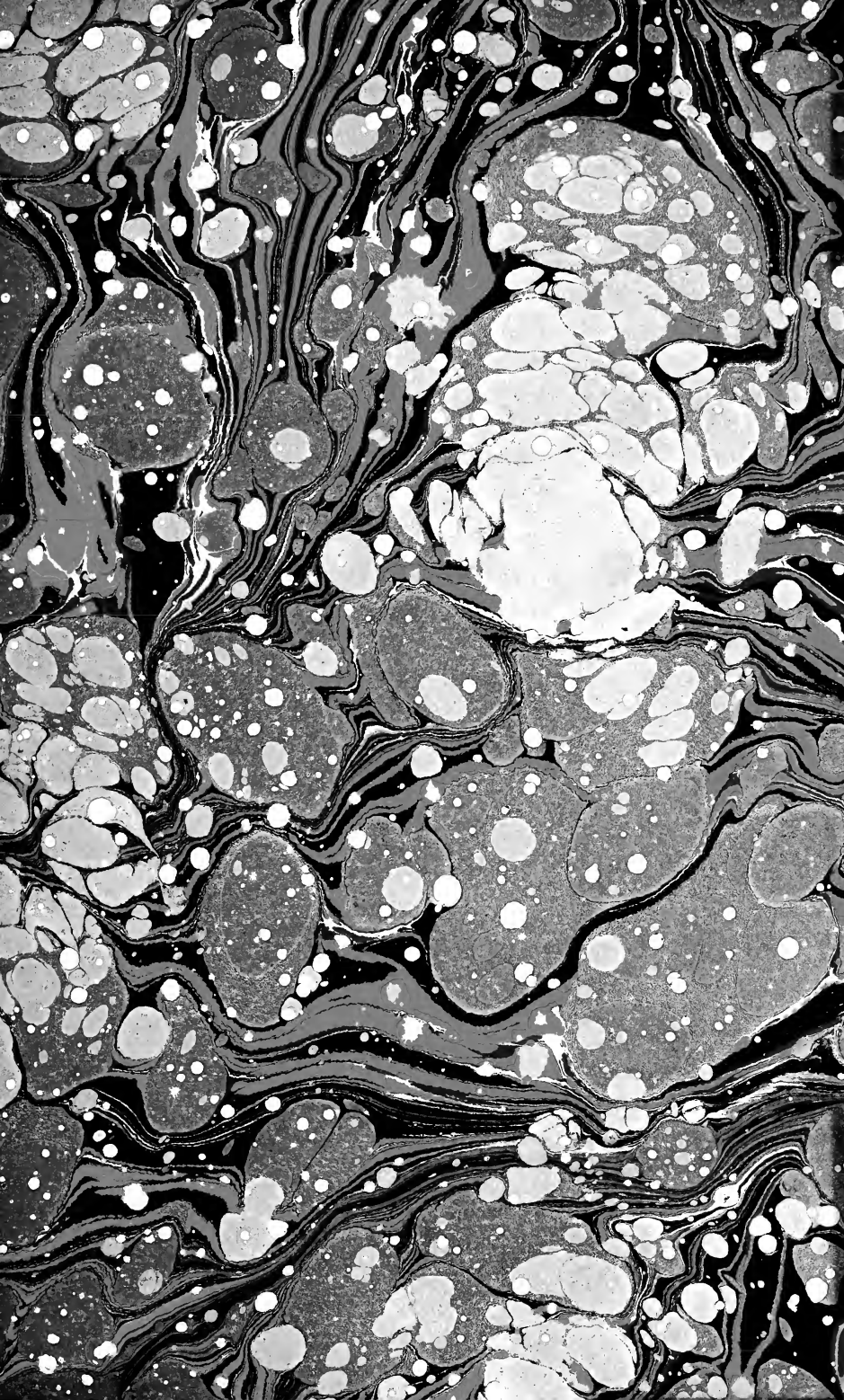
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Grevillea,

A QUARTERLY RECORD OF

CRYPTOGAMIC BOTANY

AND ITS LITERATURE.

EDITED BY M. C. COOKE, M.A., A.L.S.,

*Author of "Handbook of British Fungi," "Fungi, their uses," &c.,
"Rust, Smut, Mildew, and Mould," &c., &c.*

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^C_K

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NEW BRITISH FUNGI.

By M. C. COOKE.

(Continued from Vol. vii., pp. 133.)

Cortinarius (Phlegmacium) turmalis. *Fr. Hym. Eur.*, 33*f*.

Pileus fleshy, convex then plane, even, viscid, smooth, discoid; stem cylindrical, white, at first clad with the woolly white veil, then naked; ring fibrillose, annular, persistent; gills emarginate or decurrent, crowded, whitish, then clay-coloured.—*B. & Br. Ann. N. H.*, No. 1774.

In woods. Glamis N.B.

Cortinarius (Dermocybe) decumbens. *Fr. Hym. Eur.*, 366.

Pileus fleshy, convex, expanded, even, smooth, white, then yellowish, shining; stem stuffed, then hollow, clavately bulbous, ascending, smooth; gills adnexed, crowded, clay-coloured.—*B. & Br. Ann. N. H.*, No. 1775.

In woods. Epping.

Cortinarius (Hydrocybe) duracinus. *Fr. Hym. Eur.*, 388.

Pileus fleshy, thin, rigid, convex plane, gibbous, smooth, watery brick-red (or tan coloured); stem stuffed, rigid, unequal, rooting, smooth, silky with the remains of the thin veil; gills adnate, rather crowded, thin, watery cinnamon.—*B. & Br. Ann. N. H.*, No. 1776.

On the ground in woods. Dun, Forfar, N.B.

Hygrophorus ventricosus. *B. & Br.*

White. Pileus convex, fleshy, unequal; stem solid, attenuated towards the apex and the base; gills long, decurrent, narrow.—*B. & Br. Ann. N. H.*, No. 1777.

Amongst grass. Coed Coch.

“Often tinged with red from the growth of a little *Fusisporium*. Pileus 2-3 in.; stem 2½ in., ½ in. thick in the middle, solid, but at length partially hollow; gills sometimes forked.”

Hygrophorus penarius. *Fr. Hym. Eur.*, 406. *Fr. Atl. Scam.*, t. 38.

Compact, white then pallid; pileus fleshy, even, smooth, rather dry, opaque; stem solid, firm, unpolished, rough, fusiform, and rooting at the base; gills decurrent, distant, thick.—*B. & Br. Ann. N. H.*, No. 1778.

In mixed woods. Stoke Poges.

Hygrophorus micaceus. *B. & Br.*

Pileus hemispherical, at first yellow, then cinereous, rugose, micaceous; stem yellow, then brown above, granulated, solid; gills decurrent, pallid-umber.—*B. & Br. Ann. N. H., No. 1779.*

On clayey soil. Coed Coch.

Hygrophorus fœtens. *Phil. in Grevillea vii., p. 74, t. 121, fig. B.*
B. & Br. Ann. N. H., No. 1780.

Hygrophorus lacmus. *Fr. B. & Br. Ann. N. H., No. 1780.**

On lawns. Coed Coch.

"The base of the stem was in every specimen yellow, which colour remains in the dried plant."

Hygrophorus Wynnæ. *B. & Br.*

Lemon coloured, hygrophanous. Pileus umbilicate, or rather infundibuliform, thin, striate; gills narrow, thin, decurrent.—*B. & Br. Ann. N. H., No. 1781. Grevillea vii., t. 121, fig. A.*

On old chips, stumps, &c. N. Wales. Yorks.

"Resembling *Ag. mollis*, Bull., but on a smaller scale, a species which does not seem to have been noticed by Fries. Fœtid when decayed, losing much of its lemon-colour when it parts with its moisture."

Cantharellus cibarius. *Fr. Hym. Eur., 455.*

A curious variety, here and there tinged with pink, approaching somewhat in character *C. Friesii*. When dry not distinguishable from the common form.—*B. & Br. Ann. N. H., No. 1781.**

On the ground. Coed Coch.

Cantharellus Friesii. *Quelet. Jur. p. 191, t. 23, f. 2.*

Pileus fleshy, thin, convex, then depressed, villous, somewhat orange; stem solid, slender, villous; base white, attenuated; gills narrow, fold-like, branched, yellowish.—*B. & Br. Ann. N. H., No. 1782.*

On the ground. Sydenham.

Lactarius scoticus. *B. & Br.*

Pileus depressedly tomentose, then smooth; margin involute, tomentose; flesh firm; stem nearly equal, smooth, somewhat flesh coloured; gills thin, scarcely branched; milk acrid, persistently white; odour pungent.—*B. & Br. Ann. N. H., No. 1783.*

Amongst moss. Aboyne.

Lactarius obnubilus. *Lasch. Fr. Hym. Eur., 438.*

Pileus fleshy, thin, convex, then umbilicate, smooth, rather striate, not zoned, dingy-brown; stem stuffed, then hollow, thin, paler; gills rather crowded, becoming yellowish; milk rather sweet, white.—*B. & Br. Ann. N. H., No. 1784.*

In shady woods. Glamis, N.B.

Russula elephantina. *Fr. Hym. Eur., 440.*

Pileus equally fleshy, firm, convex, umbilicate, smooth, tan colour, then brownish; margin undulated, paler, without striæ; stem hard, obese, white; gills obtusely adnate, rather crowded, thin, white (spotted with grey).—*B. & Br. Ann. N. H., No. 1785.*

In woods. Stoke Poges.

Russula Linnæi. *Fr. Hym. Eur.*, 444.

Mild, pileus everywhere fleshy, plano-depressed, polished, dry, smooth; margin spreading, obtuse, without striæ, flesh spongy-compact, white; stem spongy, solid, obese, cracked, reddish; gills adnate, somewhat decurrent, rather thick, white then yellowish, sometimes forked and anastomosing.—*B. & Br. Ann. N. H.*, No. 1786.

In woods. Stoke Poges.

Russula fellea. *Fr. Hym. Eur.*, 448.

Very acrid. Pileus fleshy, thin, convex plane, opaque, and growing pale; margin even, at length striate; flesh firm; stem spongy, stuffed then hollow, even; gills adnate, crowded, nearly equal, white then straw-coloured.—*B. & Br. Ann. N. H.*, No. 1787.

In beech woods. Coed Coch.

The whole plant lemon-coloured.

Marasmius varicosus. *Fr. Hym. Eur.*, 469.

Inodorous. Pileus rather fleshy, tough, campanulate, then plane, rather umbonate, darker when dry; stem hollow, thin, smooth, rusty, filled with a dark red juice; base tomentose; gills receding, free, much crowded, very narrow, when dry umber-brown.—*B. & Br. Ann. N. H.*, No. 1788.

In mossy places. Apethorpe.

Marasmius impudicus. *Fr. Hym. Eur.*, 471.

Fœtid; pileus rather fleshy, tough, convex plane, or depressed; margin at length striate and plicate, growing pale; stem hollow, equal, becoming purplish, when dry everywhere whitish-velvety, base naked, rooting; gills nearly free, ventricose, flesh coloured, then whitish.—*B. & Br. Ann. N. H.*, No. 1789.

Amongst firs. Hanham.

Marasmius calopus. *Fr. Hym. Eur.*, 472.

Inodorous; pileus rather fleshy, tough, convexo-plane or depressed, even, at length rugose; stem hollow, equal, smooth, not rooting, shining, reddish bay; gills emarginate adnexed, thin, white.—*B. & Br. Ann. N. H.*, No. 1790.

On grass roots, &c. Bristol.

Marasmius institius. *Fr. Hym. Eur.* 478.

Inodorous; pileus membranaceous, tough, convexo-plane, rather umbilicate, unpolished, at length sulcate; stem horny, hollow, clad with floccose meal, reddish, becoming brownish, attenuated downwards; gills broadly adnate, attenuated behind, distant, simple, unequal, white, then pallid.—*B. & Br. Ann. N. H.*, No. 1792.

On oak leaves. King's Cliffe.

Marasmius Vaillantii. *Fr. Hym. Eur.*, 472.

Inodorous; pileus rather membranaceous, tough, soon flattened, depressed, plicate, becoming whitish; stem stuffed, smooth, bay brown, incrassated at the apex, and paler; gills broad, rather decurrent, thick, distant, white.—*B. & Br. Ann. N. H.*, No. 1791.

In the stoves. Botanic Gardens, Regents Park.

Marasmius saccharinus. *Fr. Hym. Eur.*, 479.

Pileus membranaceous, convex, rather papillate, smooth, sulcate or plicate; stem very thin, flocculose then smooth, reddish; gills broadly adnate, narrow, thick, very distant, joined by veins, whitish.—*B. & Br. Ann. N. H.*, No. 1793.

On leaves, &c. Kings Cliffe, &c.

Marasmius Curreyi. *B. & Br.*

Pileus nearly plane, sulcate, pallid rufous, somewhat radiating, grooves paler, umbo tawny, stem quite smooth, shining, black, white at the apex; gills few, rather ventricose, cream coloured, forming a collar, interstices veined or quite smooth.—*B. & Br. Ann. N. H.*, No. 1794.

On leaves of grass. Fineshade.

Marasmius Broomei. *Berk.*

Half resupinate, pallid brown, striate, then black, hymenium white; gills distant, veined, interstices smooth.—*B. & Br. Ann. N. H.*, No. 1795.

On dead twigs. Batheaston.

Panus Stevensoni. *B. & Br.*

Pileus spathulate, olive yellow, stem dilated above, convex, golden, slightly hispid; gills narrow, entire; flesh greenish yellow.—*B. & Br. Ann. N. H.*, No. 1796.

On oak. Scotland.

Boletus spadiceus. *Schæff., t.*, 126.

Pileus pulvinate, expanded, dry tomentose, bright bay, opaque, then sparsely rimose; stem firm, clavate, even, clad with floccose meal, yellow, then tawny; tubes adnate, yellow; pores minute, rather rounded.—*B. & Br. Ann. N. H.*, No. 1797.

About the base of trunks. Glamis, N.B.

Boletus pusio. *Howse.*

Small, pulverulent; stem thickened downwards, becoming blackish, plicate, springing from a floccose mycelium.—*B. & Br. Ann. N. H.*, No. 1798.

On the ground. Kent.

Polyporus (Anodermei) alutaceus. *Fr. Hym. Eur.*, 543.

Pileus fleshy, then tough, kidney shaped, rather velvety, tan coloured, obsoletely zoned within, margin acute, even; pores very small, thin, rather rounded, whitish, then tan coloured.—*B. & Br. Ann. N. H.*, No. 1799.

On fir stumps. Glamis, N.B.

Polyporus (Anodermei) cerebrinus. *B. & Br.*

Snow white, pulvinate, delicately tomentose, becoming smooth; margin crenate, pores rounded, entire, dissepiments thick, obtuse.—*B. & Br. Ann. N. H.*, No. 1800.

On fir. Glamis, N.B.

"About an inch across. Looks like a portion of some white brain."

Polyporus (Placodermei) roseus. *Fr. Hym. Eur.*, 562.

Pileus between corky and woody, hard, triquetrous, even, rosy without and within, externally blackened, internally floccose fibrous; pores minute, rounded.—*B. & Br. Ann. N. H.*, No. 1801.

On dressed pine in hothouse. Glamis.

Polyporus (Inodermei) polymorphus. *Rostk.*, iv. t., 56.

Pileus resupinate, effused, coriaceous, margin reflexed, crispate, smooth, umber; pores rather large, angular and torn, pallid.—*B. & Br. Ann. N. H.*, No. 1802.

On fir on a fence. Forres, N.B.

Polyporus (Inodermei) pubescens. *Fr. Hym. Eur.*, 553.

Pileus tough, fleshy, then corky, soft, convex, rather zoned, pubescent, white without and within, margin acute, at length yellowish; pores short, minute, rather rounded, plane.—*B. & Br. Ann. N. H.*, No. 1803.

On broom. Menmuir, N.B.

Polyporus (Inodermei) cryptarum. *Nees.*, fig. 222 B.

Pileus effused, coriaceous, thin, fuliginous, then rufescent; tubes very long.—*B. & Br. Ann. N. H.*, No. 1804.

On fir trees.

“This is not *P. undatus*, Fr, which has a very different texture and colour, though there is a strong external resemblance. It is, in fact, more nearly related to *P. ferruginosus*, and is perhaps a mere state of it.”

Polyporus (Inodermei) Herbergii. *Rostk.*, xxix. t., 18.

Cæspitose, rather corky. Pileoli imbricate, bright bay, sulphury about the margin; pores labyrinthiform, unequal, lacerated and dentate, pale cinereous.—*B. & Br. Ann. N. H.*, No. 1805.

On trunks. Edinburgh.

Polyporus (Resupinatus) rhodellus. *Fr. Hym. Eur.*, 573.

Effused, thin, adnate, soft, pale flesh colour, margin determinate, naked; pores minute, rather rounded, contiguous.—*B. & Br. Ann. N. H.*, No. 1806.

On Scotch fir. Glamis, N.B.

Plyporus (Resupinatus) bathyporus. *Rostk.*, iv. t., 59.

Effused, white, circumference thin and byssoid; pores rather large, cupshaped, and toothed.—*B. & Br. Ann. N. H.*, No. 1807.

On dead oak branches. Coed Coch.

“It looks very like a resupinate form of *Dædalea confragosa*.”

Polyporus (Resupinatus) radula. *Fr. Hym. Eur.*, 578.

Effused, white, with a tomentose mycelium, soft, villous beneath; pores medium-sized, angular, toothed, pubescent when young.—*B. & Br. Ann. N. H.*, No. 1808.

On sticks. Scotland.

Polyporus (Resupinatus) ramentaceus. *B. & Br.*

Nearly orbicular, subiculum white, tomentose; margin obsolete; pores honey-coloured, broad, rather hexagonal; dissepiments thin, rather rigid, acute.—*B. & Br. Ann. N. H., No. 1809.*

On dead sticks. Glamis, N.B.

Pores $\frac{1}{32}$ in. across.

Polyporus (Resupinatus) reticulatus. *Weinm., p. 339. Fr. Sys. Myc. i., 385.*

Orbicular, thin, fugacious, white; margin radiating, floccose; pores distant, cup-shaped.—*B. & Br. Ann. N. H., No. 1810.*

On rotten wood. Glamis, N.B.

Polyporus (Resupinatus) hymenocystis. *B. & Br.*

Snow-white beneath, and the margin arachnoid; pores broad, dissepiments rough, collapsing, at length pallid.—*B. & Br. Ann. N. H., No. 1810 bis.*

On dead wood. Glamis, N.B.

Trametes purpurascens. *B. & Br.*

Resupinate, rather leathery, externally delicately tomentose, chestnut; hymenium becoming purplish; pores small, dissepiments rigid.—*B. & Br. Ann. N. H., No. 1811.*

On dead willow. Cotterstock.

About $\frac{3}{4}$ in. across; pores $\frac{1}{100}$ in. diam. Resembling some forms of *Polyporus abietinus*.

Dædalea heteromorpha. *Fr. S. M. i., 340.*

Effused, rather membranaceous, dingy-yellowish; margin byssoid; pores irregular, flexuous.—*B. & Br. Ann. N. H., No. 1812.*

On an old post, apparently of fir. Sufton Court.

"This is now referred by Fries to *Lenzites*, but our specimens clearly belong to *Dædalea*."

Hydnum sepultum. *B. & Br.*

Wholly resupinate, golden-yellow; margin white; spines acute, middle-sized.—*B. & Br. Ann. N. H., No. 1813.*

Amongst pine leaves. Glamis, N.B.

"Forming little scattered patches on stones buried amongst pine leaves."

Radulum aterrimum. *Fr. Hym. Eur., 624.*

Innate, throwing off the bark, strigose, black; tubercles elongated, distant, large, deformed, rather compressed, black.—*B. & Br. Ann. N. H., No. 1814. Hydnum erectum, Herb. Sow.*

On birch. Kensington Gardens.

Irpe x spathulatus. *Fr. El., p. 146.*

Effused, membranaceous, white, at first byssoid, at length smooth; teeth spathulate, equal, entire, reticulately connected by suppressed veins.—*B. & Br. Ann. N. H., No. 1815.*

On larch. Northumberland.

Thelephora undulata. *Fr. Hym. Eur.*, 633.

Pallid. Pileus between coriaceous and membranaceous, depressed, even, bare; margin entire, undulated; stem short, villous; hymenium costate, setulose.—*B. & Br. Ann. N. H.*, No. 1816. *Schæff. Icon.*, t. 278.

On the ground. Coed Coch.

Hymenochaete Stevensonii. *B. & Br.*

Pallid fawn colour, rigid; margin obtuse, elevated, hispid with rufous bristles.—*B. & Br. Ann. N. H.*, No. 1817.

On bark of yew. Glamis, N.B.

“A very curious and distinct species.”

Stereum ochroleucum. *Fr. Hym. Eur.*, 639.

Pileus between coriaceous and membranaceous, free, expanded, flaccid, silky, zoned, hoary; hymenium even, smooth, yellowish.—*B. & Br. Ann. N. H.*, No. 1818.

On trunks. Glamis, N.B.

“Often resupinate.”

Corticium porosum. *B. & Curt.*

Resupinate, milk white, here and there porose; margin free, reflexed.—*B. & Br. Ann. N. H.*, No. 1821.

On trunks. Aboyne.

“Apparently the same with specimens from Venezuela. The pores look as if little dewdrops had settled on the hymenium, which had in consequence contracted, or rather retracted.”

Corticium puberum. *Fr. Hym. Eur.*, 652.

Broadly effused, waxy, adnate, indeterminate, white or clay-coloured; hymenium even, velvety with short setæ, cracked when dry.—*B. & Br. Ann. N. H.*, No. 1822.

On wood. Scotland, Hereford, Sydenham.

Corticium subdealbatum. *B. & Br.*

Effused, white; hymenium fawn-coloured from the pale setæ.—*B. & Br. Ann. N. H.*, No. 1823.

On fir. Badminton.

Apparently the same thing occurs in Pennsylvania, U.S.

Corticium fœtidum. *B. & Br.*

Fœtid, effused, resupinate, arachnoid beneath, white then ochraceous, smooth.—*B. & Br. Ann. N. H.*, No. 1824.

On sawdust. Coed Coch.

Corticium scutellare. *B. & Curt. Grevillea i.*, No. 232.

Resupinate, effused, immarginate, whitish or somewhat clay-coloured; hymenium cracked in minute areolæ.—*B. & Br. Ann. N. H.*, No. 1825.

On *Ulex*. Scotland.

Clavaria Kunzii. *Fr. Hym. Eur.*, 669.

Rather fragile, very much branched from a thin base, white; branches elongated, crowded, repeatedly forked, fastigiate, even, equal, compressed at the axils.—*B. & Br. Ann. N. H.*, No. 1819.

On the ground.

Clavaria ligula. *Fr. Sys. Myc. i., 477.*

Simple, gregarious, spongy, fleshy, elongated clavate, obtuse, villous at the base, yellowish when young, rufescent or pallid when mature.—*B. & Br. Ann. N. H., No. 1820.*

In woods. Scotland.

Octaviana compacta. *Tul. Hym. 79, t. xi., f. 3.*

Small, snowy-white; peridium rather soft, cottony; cells rounded or oblong, very minute, soon obliterated, septa scarce conspicuous; spores very small, spherical, rough, yellowish, then ochraceous ($\cdot 0056\text{--}\cdot 0064$ mm.).—*B. & Br. Ann. N. H., No. 1826.*

In woods. Shoreham.

Exobasidium Rhododendri. *Cramer.*

Forming subglobose or irregular fleshy nodules, resembling galls, of a bright reddish colour on young shoots and leaves. Spores cylindrical ($\cdot 008$ mm.).—*Rabh. Fun. Eur., No. 1910, Gard. Chron., 1879, pp. 119, 182.*

On *Rhododendron ferrugineum*, and other species. Bodorgan, &c.

Phoma Mulleri. *Cke.*

Punctiform, scattered; perithecia small, covered, piercing the cuticle with the short ostiola; spores narrowly elliptical, hyaline, with a nucleus at either extremity ($\cdot 01\text{--}\cdot 012 \times \cdot 003$ mm.).

On *Rubus*. Eastbourne (C. J. Muller).

Sporidesmium digitatum. *Cke.*

Effused, black, densely velvety, extending for some inches. Spores in fascicles, two to four together, obclavate flexuous, dark brown, paler above, multiseptate ($\cdot 08\text{--}\cdot 12 \times 015$ mm.).

On holly branches. Neatishead, Norfolk.

Fusisporium filisporum. *Cke.*

Tufts minute, seated amongst the leaves beneath the capsules of mosses, rosy; spores filiform, very long, multiseptate, with a tendency to break at the joints ($0\cdot 17$ mm. long).

On *Orthotrichum*. Eastbourne (C. J. Muller).

Leotia Stevensoni. *B. & Br.*

Short, densely caespitose; pileus and stem greenish.—*B. & Br. Ann. N. H., No. 1827.*

On the ground. Glamis.

"This has a very different habit from *Leotia lubrica*, and approaches *L. atrovirens*. There does not appear to be any decided difference in the fruit."

Peziza (Humaria) ollaris. *Fr. Sys. Mic. ii., 68.*

"*Mycographia*," fig. 56.—*B. & Br. Ann. N. H., No. 1828.*

On the ground. Glamis. Hereford.

Peziza (Patellea) Euphorbiae. *B. & Br.*

Minute, sessile, margin rather prominent, black; hymenium white; asci clavate; sporidia biseriate, globoso-elliptical.—*B. & Br. Ann. N. H., No. 1829.*

On stems of *Euphorbia amygdaloides*. Batheaston.

"Cups $\cdot 016$ in.; sporidia $\cdot 0002$ in. ($\cdot 005$ mm.) long, and nearly as broad."

Patellaria pallida. *Berk.*

Gregarious, sessile, pallid, margin rather obtuse; sporidia biseriate, oblong, slightly curved.—*B. & Br. Ann. N. H.*, No. 1831.
On smooth bark.

Sporidia $\cdot 0005$ in. ($\cdot 0125$ mm.) long.

Phacidium leptidium. *Fr. S. M.* ii., 576.

Somewhat innate, depressed, plane, black, splitting into several acute laciniae, disc straw-coloured; sporidia filiform, curved, hyaline ($\cdot 012 \times \cdot 003$ mm.); stylospores produced earlier in the season, fusiform, acute, triseptate ($\cdot 07 \times \cdot 005$ mm.).

On *Vaccinium myrtillus*. Scotland.

Rhytisma radicalis. *Cke.*

Black, opaque, ambient, splitting irregularly, and exposing the grey hymenium; asci cylindrical; sporidia uniseriate, clavate, hyaline ($\cdot 012 \times \cdot 003$ mm.); stylospores produced earlier in the season, fusiform, acute, triseptate ($\cdot 07 \times \cdot 005$ mm.).

About the roots of *Rhinanthus crista galli*. North of Scotland (Mr. Taylor).

Gouty black swellings are formed both by the stylosporous and ascosporous conditions. The sporidia apparently not fully mature.

Hypocrea riccioidea. *Berk.*, in *Cke. Hdbk.*, No. 2329.

Hypocrea parmelioides, Mont. Syll.—*B. & Br. Ann. N. H.*, No. 1831*.

This curious species, which is *Sphaeria riccioidea*, Bolt, has lately been found on willow twigs by the Rev. J. Stevenson, at Glamis.

Hypomyces chrysospermus. *Tul. Sel. Carp.*, iii., 49.

Perithecia numerous, in a dense compact stratum, ovoid, at first hyaline then dingy yellow; asci cylindrical; sporidia elongated, unequally pseudo-septate, hyaline ($\cdot 021\text{--}\cdot 025 \times \cdot 006$ mm.); conidia as in *Sepedonium chrysospermum*.—*B. & Br. Ann. N. H.*, No. 1832.

On *Boleti*. Coed Coch.

Nectria aurea. *Grev. S. Cr. Fl.*, t. 47.

Aurea. Peritheciis sparsis vel gregariis, ovatis, ceraceis, circa ostiolis obscurior; asci cylindræis; sporidiis uniseriatis, ellipticis, hyalinis, uniseptatis, nec constrictis, utrinque rotundatis ($\cdot 017 \times \cdot 0075$ mm.) “Cooke Hdbk.,” p. 785.

On semi-putrid fungi.

The above measurements determined from the original specimens.

Nectria affinis. *Grev. S. Cr. Fl.*, t., 186.

Aurantia. Peritheciis sparsis, globosis, glaberrimis, ad basim albo-floccosis; asci cylindræis; sporidiis arcte ellipticis.

On *Ephebe pubescens*. Appin (Carmichael).

This has been omitted so long on account of our not having examined authentic specimens. Those from Greville and also from Roussel, do not accord with the description given by Saccardo, under *Paranectria affinis* (“*Michelia*,” i., p. 317), which must be a different species. The perithecia are as large as in *N. sanguinea*, the sporidia although immature, would probably not exceed $\cdot 012$ mm. in length, and seem to be uniseptate, but of this we could not be certain.

Nectria epigæa. Cooke.

Aurantio-coccinea. Peritheciis subglobosis, depressis, subgranulatis, poro pertusis, mycelio albo tenue insidentibus; asci cylindraceis; sporidiis ellipticis, uniseriatis, hyalinis, uniseptatis, vix constrictis (0.13×0.005 mm.).

On the ground. Penecuik, N. B.

Allied to *N. sanguinea*, but the perithecia are paler, by no means so even, and more or less surrounded by white fibrils at the base. In external appearance the species are evidently quite distinct, as well as internal characters. We have not seen *Nectria terrestris*, Crouan, which does not wholly accord in description with the above.

Xylaria tortuosa. *Sow. M. S., in Herb. Kew.*

Corky, brittle, repeatedly branched, slender and rhizomorphoid, black, about 4 inches high, here and there bearing clavate fertile branches, which are obtuse; perithecia rather prominent, crowded; asci cylindrical; sporidia uniseriate, narrowly fusiform, obtuse at the ends, slightly curved, brown ($0.02-0.022 \times 0.004$ mm.).

On the ground. Kew Herbarium (Sowerby).

This specimen is labelled "*Sphæria tortuosa*, J. S.," and thus noted:—"Found at Mead Place, and I have given Mr. Dickson the first publishing of it. I don't know what Mr. D. will call it." This specimen passed to Mr. Dawson Turner, and has apparently never been described. In form it resembles the *Xylaria guepini*, var. *eupeliaca*, figured by Cesati in the "Comm. Soc. Critt. Ital.," but the sporidia are very much larger, at least 4 or 5 times as long. It also somewhat resembles *X. rhizomorpha*, Mont., but the sporidia in that species are very small. There is no other species to which it would be referred. It could scarcely be any condition of *Xylaria polymorpha*, which has similar but rather narrower sporidia.

Sphæria corniella. Cke.

Perithecia scattered, covered, piercing the cuticle with the erumpent ostiola. Asci clavate. Sporidia uniseriate elliptical, or somewhat fusiform, hyaline (0.02×0.006 mm.).

Botryosphæria corni, Sacc. Fun. Ital., fig. 182, not *Sphæria Corni*, Sow.

On twigs of *Cornus*. Shrewsbury. (Rev. W. A. Leighton, in Kew Herbarium.)

Sphærella thallina. Cke.

Perithecia scattered over the thallus, minute, semi-immersed, dark-brown, scarcely papillate; asci clavate; sporidia biseriata, elliptical, hyaline, uniseptate, scarce constricted at the septum (0.15×0.005 mm.).

On thallus of *Physcia obscura*. Eastbourne (C. J. Muller).

Orbicula perichænoides. Cke.

Scattered, superficial. Perithecia orbicular, depressed, ruptured irregularly, and exposing the pale contents; asci cylindrical; sporidia globose, hyaline ($0.01-0.012$ mm.), uniseriate, mixed with numerous filiform paraphyses; asci soon dissolved.

On old fir beams. Forres (Rev. J. Keith).

Eurotium fulvescens. *Cke.*

Asci minute, globose, attached in groups to slender threads.
= *Badhamia fulvescens*, Cke. in "Grevillea," iv., p. 69.

On old sacking. Near Perth, N. B.

This was described as a *Badhamia*, but a closer examination has shown that the sacs which enclose the spores are true asci, and that the plant is most nearly related to *Eurotium*.

NEW JERSEY FUNGI.

By M. C. COOKE AND J. B. ELLIS.

(Continued from Vol. VII., page 42.)

Corticium fuisporum. *C. & E.*

Irregulariter effusum, carnosum, molle, olivaceo-fuscum, ambitu mucedineo pallido; hymenio subundulato, sporis fusiformibus, fuscis, pulverulento ($0.025-0.028 \times 0.005$ mm.).

On stumps (?)

No. 3092.

Very similar to *C. puteanum*, Fr.; separating from the matrix readily. Thin and soft.

Diplodia glandicola. *C. & E.*

Sparsa. Peritheciis minimis, atris, vix prominulis. Sporibus ellipticis, uniseptatis, brunneis ($0.025-0.028 \times 0.012$ mm.), nec constrictis.

On hazel nuts.

No. 3178.

Septoria tenella. *C. & E.*

Sparsa. Peritheciis atris, punctiformibus, prominulis; sporibus linearibus, rectis vel curvulis, hyalinis (0.04 mm. long).

On *Festuca tenella*.

No. 3079.

Septoria Liquidambaris. *C. & E.*

Epiphylla. Maculis brunneis, suborbicularibus, minimis. Peritheciis atrobrunneis, congestis; sporibus flexuosis, linearibus ($0.055-0.06$ mm. long).

On leaves of *Liquidambar*.

No. 3186.

Phyllosticta phaseolina. *Sacc. in Michelia.*

On leaves of *Phaseolus diversifolius*.

No. 3184.

Phyllosticta acericola. *C. & E.*

Epiphylla. Maculis pallidis, purpureo-cinctis. Peritheciis punctiformibus, dispersis; sporibus ovatis, hyalinis (0.008×0.005 mm.).

On maple leaves.

Nos. 3081, 3093.

Sporidesmium conglobatum. *C. & E.*

Atrum. Cæspitulis sphaeræ-formibus, gregariis, opacis; sporibus ellipticis vel clavatis, aterrimis, opacis, cellulosis, in cæspitulis dense congestis ($0.01-0.12 \times 0.03-0.035$ mm.).

On naked wood.

No. 3172.

Spores somewhat resembling those of *S. stygium*, but with the habit of a *Sphaeria*. Tufts about one-fourth mm. diameter. No. 2188 of a previous series is *S. stygium*.

Tetraploa Ellisii. Cke.

Effusa, atra; sporis ternatis vel quaternatis, obclavatis, septatis, superne liberis, divergentibus, attenuatis.

On old stalks of maize.

Differing from *T. aristata* in its broad black patches, in the larger spores, in the manner in which the spores are regularly attenuated into the awns, the smaller angle at which they diverge, and in the general form of the complex spore, the parts being much less fused together so as to have a more distinct resemblance to a compound *Sporidesmium*.

Stilbum parvulum. C. & E.

Sparsum vel subfasciculatum, parvulum, pallidum, capitulis subglobosis. Stipite ad basin tomentoso, erecto, gracili. Sporis arcte ellipticis, hyalinis ($0.01-0.02 \times 0.04$ mm.).

On rotten wood.

No. 3132.

Monilia aureofulva. C. & E.

Læte aurantio-rubra, sub-effusa, margine pallidiore. Hyphis sparse ramosis, intricatis, septatis; sporis apicalibus, amygdalæformibus, demum ovalibus, aurantiacis, primo pauce concatenatis dein liberis (0.025×0.02 mm.).

On old oak.

No. 3155.

Closely allied to *Monilia hesperidea*, Sacc., but more effused, and of a different colour. The spores are formed consecutively by constriction of the tips of the threads. Seldom more than two spores are seen adhering in a chain.

Stachylidium fuscum. C. & E.

Effusum, fuscum. Hyphis fasciculatis, erectis; ramulis brevibus, obclavatis, verticellatis, sporis minimis, ellipticis (0.04×0.02 mm.), in capitulis globosis congestis.

On wood of *Magnolia*.

No. 3198.

Trichothecium griseum. Cke. in "Grevillea."

On *Panicum sanguinale*.

No. 3087.

Campsotrichum flagellum. C. & E.

Murinaceum. Cæspitulis sparsis, hennisphericis. Hyphis erectis, septatis, brunneis, superne in 3-5 ramulis flagelliformibus flexuosis, decumbentibus divis. Sporis cylindræis ($0.15-0.02$ mm. long).

On herb stems.

No. 3160.

Macrosporium porri. Elli.

Effusum, fuliginosum. Hyphis brevibus, simplicibus, subfasciculatis. Sporis elongato-clavatis, in stipitem attenuatis, multiseptatis, fuscis ($0.015-0.018$ mm. \times $0.015-0.02$ mm.).

On *Allium porrum*.

No. 3167.

The large clavate spores are attenuated in the lower third of their length into a closely septate stem. It is one of the largest spored species with which we are acquainted.

Helminthosporium leptotrichum. *C. & E.*

Tenuiter effusum, atrum. Hyphis tenuibus, erectis, simplicibus, septatis, sporis ellipticis, triseptatis, fuscis ($\cdot 02\text{--}\cdot 025 \times \cdot 008$ mm.).

On rotten oak and *Polyporus*. No. 3168.

Flocci slender, erect, simple, thinner than is usual in the genus, neither constricted nor nodulose; and more resembling the threads of a *Menispora*.

Peziza (Mollisia) subatra. *C. & P.*

On *Nissæa verticellata*. No. 3021.

Sporidia more clavate than usual.

Peziza (Mollisia) atrata. *Per.*

On *Ambrosia trifida*. No. 2994.

Peziza (Mollisia) atrocinerea. *Cke.*

On *Hypericum*. No. 3085.

On *Desmodium*. No. 3066.

Peziza (Mollisia) denigrata. *Kunz. in Rabh. F. Eur.* No. 2121.

On *Festuca tenella*. No. 3079a.

Agyrium sexdecimsporum. *Fekl. Sym., pp.* 283.

On rotten *Nyssa*. No. 3071.

Glonium nitidum. *Ellis.*

Peritheciis gregariis, ellipticis, atris, nitidis, parvulis, labiis conniventibus. Sporidiis arcte ellipticis, uniseptatis, hyalinis ($\cdot 008\text{--}01 \times \cdot 003$ mm.).

On decorticated branches. No. 3016.

Nectria cucurbitula. *Curr.*

This is the form with very numerous minute sporidia, to which Saccardo has applied the name of *Chilonectria cucurbitula* in *Michelia* i., p. 280. Whether the polysporous form should be separated from the octosporous form is not necessary to be discussed here.

On pine limbs. No. 3083.

Eutypa subsecta. *Fr.—Nke. Pyr. Germ.*

On bark of *Salix*.

Valsa clausa. *C. & E.*

Cæspitulis in cortice nidulantibus, supra tectis. Peritheciis 4-6 subglobosis; ostiolis brevibus, convergentibus; ascis clavatis; sporidiis biseriatis, allantoideis, hyalinis ($\cdot 016\text{--}\cdot 018$ mm. long).

On branches of *Quercus coccinea*. No. 3100.

The bark is elevated, but scarcely pierced by the convergent ostiola.

Valsa chlorodisca. *C. & E.*

Pustulis cortice tectis; disco sordide luteo, ostiolis nigris, cylindricis, punctato; ascis clavatis; sporidiis biseriatis, allantoideis, hyalinis ($\cdot 01$ mm. long).

On Hickory. No. 3226.

The dirty yellow disc is sufficient to distinguish this from its immediate allies.

Valsa multiplex. C. & E.

Pustulis magnis, erumpentibus, elevatis; disco brunneo; ostiolis numerosis, nigris, congestis; ascis clavatis; sporidiis biseriatis, allantoideis, hyalinis (.01 mm. long).

On *Quercus coccinea*.

No. 3106.

The pustules are large and prominent as in some species of *Diatrype*. The small ostiola are very numerous, crowded together in a brown stroma.

Valsa macluræ. C. & E.

Pustulis sub-corticalibus, ostiolis congestis, tandem expositis, brunneo-cinctis; ascis clavatis; sporidiis minimis, allantoideis, hyalinis (.005 mm. long).

On *Maclura aurantiaca*.

No. 3104.

Valsa pauperata. C. & E.

On *Acer*.

No. 3200.

Valsa pulchelloidea. C. & E.

On *Quercus*.

No. 3212.

Valsa ligustrina. Cke.

Tecta, in cortice immersa. Pustulis minimis, inconspicuis. Peritheciis paucis, ostiolis abbreviatis; ascis clavatis; sporidiis allantoideis, hyalinis (.008 mm. long).

On *Andromeda ligustrina*.

Nos. 2895, 3211.

"My coadjutor regards this as a variety of *Valsa delicatula*, C. & E., an opinion in which I cannot concur."—M. C. C.

Valsa excorians. C. & E.

Pustulis in cortice immersis, elevatis, erumpentibus et epidermidem ramorum excutientibus; disco primo sordido; ascis clavatis; sporidiis allantoideis, minimis, hyalinis (.005-.006 mm. long).

On branches of *Pyrus arbutifolia*, &c.

No. 3095.

This has evidently been a species mixed up with *Valsa decorticans*, Fr., which it closely resembles, except that the sporidia in that species are nearly .01 mm. long, and in this scarcely exceeding half that length. In Europe the two species are evidently mixed together in herbaria.

Valsa subcuticularis. C. & E.

Circinata. Peritheciis globosis, decumbentibus, sub-epidermidem nidulantibus, ostiolis elongatis tenuibus, convergentibus; ascis clavatis; sporidiis allantoideis, hyalinis (.006-.007 mm. long).

On branches of Holly.

No. 3103.

The bark is slightly raised and punctured by the ostiola, but the pustules are scarcely visible externally. When the cuticle is removed, the circinating perithecia remain attached to the inner bark, somewhat like very small *V. pulchella*.

Valsa Aceris. Ntke.

Diaporthe Aceris, Fckl. Symb., pp. 204.

A distinct variety, perhaps species.

On *Acer*.

No. 3201.

Valsa corymbosa. *C. & E.*

Peritheciis atris, globosis, in ligno immersis, 6-10 nigro-cinctis; ostiolis erumpentibus; ascis cylindraceutis; sporidiis uniseriatis, ellipticis, uniseptatis, leniter constrictis, nucleatis, granulatis, hyalinis ($.018-.02 \times .008-.009$ mm.).

On branches of *Vaccinium corymbosum*.

No. 3224.

Allied to *V. personata*, *C. & E.*, but the sporidia are different in form.

Valsa apocrypta. *C. & E.*

Tecta, lineata. Peritheciis immersis, inconspicuis; ascis clavatis; sporidiis biseriatis, elongato-ellipticis, uniseptatis, vix constrictis, hyalinis ($.025-.028 \times .008-.009$ mm.).

On Hickory.

No. 3099.

Scarcely visible externally.

Valsa phæospora. (*Sacc.*) *Fenestella phæospora*. "*Sacc. Fun. Ital.*," fig. 140.

On *Quercus alba*.

Nos. 3216, 3217.

With large fenestrate sporidia.

Sphæria (Lasiosphæria) atrobarba. *C. & E.*

Superficialis. Peritheciis parvulis $\frac{1}{16}-\frac{1}{8}$ mm. subglobosis, pilis rigidis erectis, obsitis; ascis cylindrico-clavatis; sporidiis uni-vel biseriatis, arcte ellipsoideis, triseptatis, fuscis, constrictis ($.012-.014 \times .004-.005$ mm.).

On decorticated branches.

No. 3189.

Sphæria (Psilosphæria) atrograna. *C. & E.*

Sparsa, superficialis. Peritheciis subglobosis, parvulis, leniter scabrosis, obtusis, atris, opacis; ascis cylindraceutis; sporidiis uniseriatis, arcte ellipticis, uniseptatis, brunneis ($.012-.014 \times .005$ mm.).

On *Liquidambar*.

No. 3179.

Sphæria avocetta. *C. & E.*

Sparsa, immersa, dein libera. Peritheciis atris, globosis, supra in collo longe attenuatis; ascis cylindraceutis; sporidiis arcte ellipticis ($.012 \times .005$ mm.) brunneis.

On rotten wood.

No. 2860.

Perithecia at first immersed in the rotten wood, the long bent ostiola alone visible, then, as the friable wood is washed away, becoming naked, the ostiola soon broken off, thus presenting the appearance of *Ceratostoma* at one time, and at another of one of the *Denudate*. Sporidia as in *S. arcespora*, which is apparently but a form of *S. xylariæspora*, without the short hairs on the perithecia.

Sphæria (Caulicolæ) buccera. *C. & E.*

Sparsa, epidermide tecta. Peritheciis subglobosis, prominulis, atris; ascis cylindrico-clavatis; sporidiis biseriatis, fusiformibus, triseptatis, hyalinis, leniter curvulis, utrinque cornuto-appendiculatis ($.03-.032 \times .0075$ mm. sine appendiculis).

On herbaceous stems.

No. 3059.

The hyaline horns of the sporidia are ultimately absorbed.

Sphaeria (Caulicolæ) virginica. C. & E.

Sparsa, erumpens. Peritheciis subglobosis, atris, papillatis, prominulis; ascis cylindrico-clavatis; sporidiis uniseriatis, fusiformibus, 5-septatis, rectis vel curvulis, fuscis ($\cdot 06 \times \cdot 01$ mm.).

On *Lepidium Virginicum*.

No. 3003.

Sphaeria (Foliicolæ) heloniæfolia. C. & E.

Amphigena. Peritheciis sparsis, punctiformibus, prominulis, cuticulâ tectis ($0.12-0.15$ mm.). Sporidiis ellipticis 1-2 septatis, constrictis, fuscis ($\cdot 025-\cdot 03 \times \cdot 008$ mm.).

On leaves of *Helonius bullata*.

No. 3199.

Although no asci were seen, this has been assumed to be a *Sphaeria*.

Chaetomium sphærospermum. C. & E.

Peritheciis superficialibus, atris, strigosis, in cæspitulis elongatis congestis, subglobosis; pilis rigidis, erectis, elongatis, tenuibus, atrobrunneis, supra divaricato-ramosis; sporidiis globosis, brunneis ($\cdot 01$ mm. diam.).

On bottom of barrel in cellar.

No. 3174.

BOTANY OF THE WEST.

One of the most valuable scientific reports which have appeared as the result of the U.S. Government Surveys of the Territories of the West is Dr. J. T. Rothrock's final report on the Botany of the survey under charge of Lieut. Geo. M. Wheeler. It is a quarto of over 400 pages of letter-press, accompanied by 30 plates and one wood cut.

The Doctor was very fortunate in securing the co-operation of such specialists as Mr. Serreno Watson, Dr. Engleman, Prof. Porter, Mr. Bebb, Mr. Booth, Dr. Vasey, Prof. Eaton, Mr. James, and Prof. Tuckerman, all authorities in their respective branches.

The portion of the report most interesting to the readers of "Grevillea" are those by Prof. Eaton, Mr. James, Mr. Austin, and Prof. Tuckerman.

In the report of Prof. Eaton, on the Ferns of the Southwest, "it has been thought best to give, not merely a report of such as have been collected by the survey under Lieut. Wheeler, but including these to make a full report of all the ferns discovered hitherto in the regions lying W. of the 105° W. Long. and S. of the 40° N. Lat. Since many of these species are described only in works which are inaccessible to most collectors and amateurs of ferns, it seems desirable to give reasonably full descriptions of all the species and genera which are not found in 'Gray's Manual,' and to even describe anew a few which are given in that work."

"The genera *Scolopendrium*, *Struthiopteris*, *Onoclea*, *Dicksonia*, *Schizæa*, *Lygodium*, and most remarkable of all *Osmunda*, have never been discovered in any part of the territory west of the

Rocky Mountains." In this report are comprised descriptions of 16 genera and 66 species. "It must remain for years the standard authority on the ferns of that wide area."

The mosses are described and determined by Mr Thomas P. James, of Cambridge, Mass., and include "several novelties not heretofore found in this country, and a few of rare species." This paper includes 42 genera and 79 species.

"The Hepaticæ," determined by Mr. C. F. Austen, consists of a list of 5 genera and 15 species.

"The Lichens," by Prof. Edward Tuckerman, comprises a catalogue of 16 genera and 28 species.

The last two papers contain no descriptions, but are mere catalogues, no new species having been detected by these cryptogamists.

The grasses were examined and reported on by Dr. Geo. Vasey; the Junceæ, Commelyneæ and Cyperaceæ, by Dr. Geo. Engleman; the Labiataæ, Scrophulariaceæ, Polemoniaceæ, Boraginaceæ and Polygonaceæ, by Prof. Thomas C. Porter; the Willows, by Mr. M. S. Bebb, of Ill.; and the Carices by Mr. Booth, of Boston.

Lieut. Wheeler, in transmitting this report to the Secretary of War, says, "The zeal and fidelity displayed by Dr. J. T. Rothrock, not only in the field, but in the preparation of his report, and in superintending the collection of other reports, are worthy of full commendation."

The "table of orders," &c., enumerates 104 orders, 637 genera, and 1,657 species. "As a rule only the plants collected by the various parties of this survey have been enumerated or described in this report."

W. C. S.

ON PENIOPHORA.

By M. C. COOKE.*

(WITH PLATES 122 TO 126).

The order *Auricularini* of Hymenomycetous Fungi contains two genera in the Friesian arrangement, under the names of *Stereum* and *Corticium*, on the structure of which a few observations may not be wholly out of place.

It is well known that Fries paid little or no attention to microscopic characters, and that his whole classification of the Hymenomycetes was limited to all which could be detected by the aid of a common lens. In these days of microscopic research, such a limit is scarcely satisfactory, and in these two genera there are some structural features which indicate that his arrangement is not altogether so perfect as it might have been had he brought the microscope to his aid.

* Read at the Meeting of the Woolhope Club, 1878.

The hymenium of some species of the genus *Stereum* of Fries, is so decidedly velvety, that he could scarce do other than associate them in a group or subgenus whilst he ignored the generic value of *Hymenochæte*, as applied to this group by Leveille.

In the "Annales des Sciences Naturelles," for 1846, Dr. Leveille proposed *Hymenochæte* as a genus in which he included certain species of *Thelephora*, *Stereum*, and *Corticium*, which had the hymenium studded with persistent rigid setæ. These he further described as simple elongated cells, having the form of little cones, bearing no resemblance whatever to basidia. In our own country, the Rev. M. J. Berkeley accepted this genus as one worthy of adoption, as did also some Continental mycologists, whilst others still reject it, without any good or substantial reason. It is certain that the character is a permanent one, and that, as far as our experience goes, is confined to the species in which it is habitually present. This appears to be a good and valid reason in its favour, but beyond this, and confirmatory of it, is the fact that there is a general natural affinity and harmony of the species, so that almost at a glance one is led to attribute a new or unknown species to this genus on the faith of general appearance.

In the species of *Stereum* the hymenium (except in these excluded species), is smooth, composed of basidia compactly arranged side by side, and of uniform height. There are no other cells present, except in one or two isolated cases, to be alluded to hereafter, and certainly no indication of suppressed or undeveloped setæ, as in *Hymenochæte*.

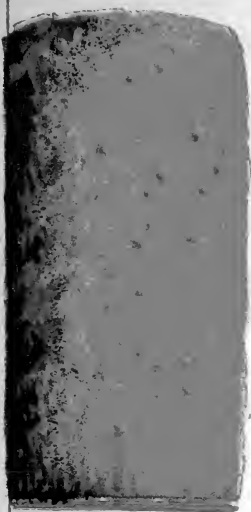
If, on the other hand, a section be cut through the hymenium of such a species as *Hymenochæte rubiginosa*, Lev. (*Sterium rubiginosum*, Fr.), elongated bright-brown setæ will be seen arising from the same stratum as the basidia, passing between them and rising above the surface, to a height at least equal to three or four times the length of the basidia. These setæ are simple cells, without any indication of septa, gradually attenuated upwards, and with the external surface entirely smooth.

In some species, as in *Hymenochæte rubiginosa*, the setæ are uniformly long and slender, whereas in others, as in *Hymenochæte tabacina*, Lev., they are shorter and thicker, and in *Hymenochæte pellicula*, Berk. & Br., very small and delicate, but in all the character is the same, though differing in size and proportions.

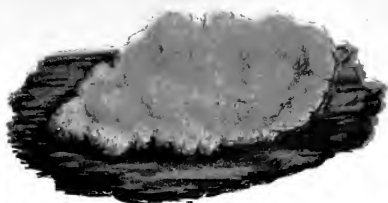
This much is known to all mycologists, and admitted even by those who will not accept Leveille's genus, against which no sound objection has yet been urged. There is nevertheless another form of hymenium which prevails in some species of *Corticium* and in one or two species of *Stereum*, which, if known, is not recognised. This form seems to bear just the same relationship to *Corticium* that *Hymenochæte* bears to *Stereum*. It may be illustrated by a very common and familiar species.

If a section be cut through the hymenium of *Corticium quercinum*, Fr., it will be seen that there are numerous bodies mixed

1.

*P. Ayresii* B.

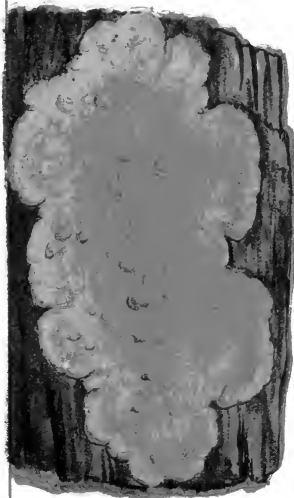
2.

*P. disciforme* (Fr.)

3.

*P. aschista* (B&Br.)

4.

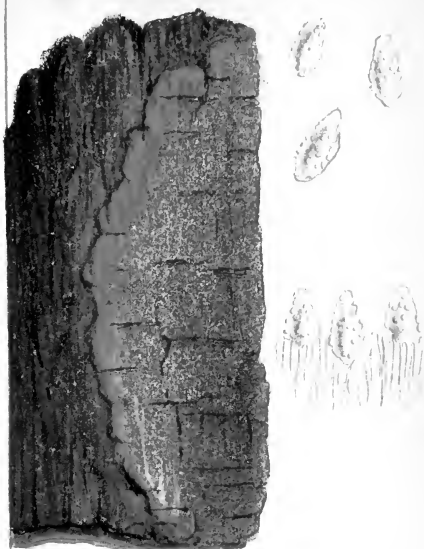
*P. Berkeleyi* C.



5.

*P. lilacina* (B&Fr.)

6.

*P. tephra* B&C)

7.

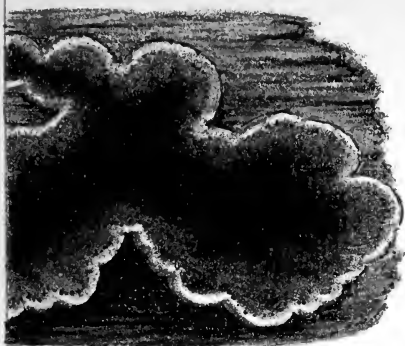
*P. limitata* (Fr.)

8.

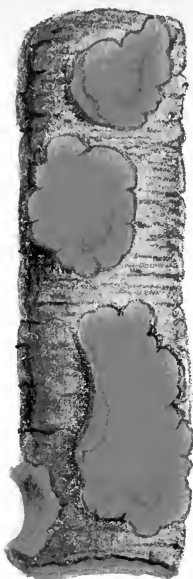
*P. cinerea* (Fr.)



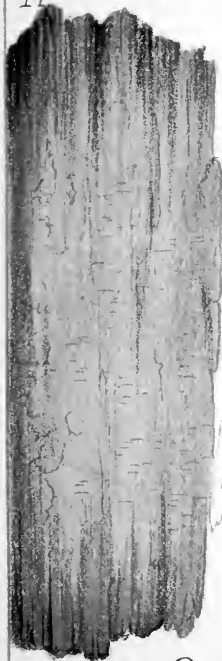
9

*P. papyrina* M.

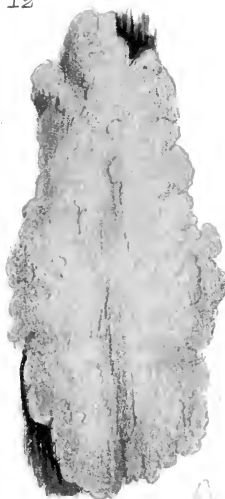
10.

*P. Habgallæ* (B&Br.)

11

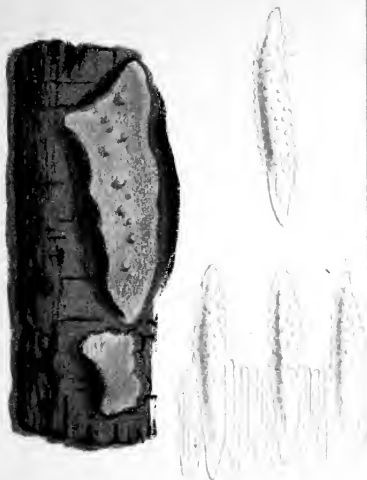
*P. carnea* (B&Cke)

12

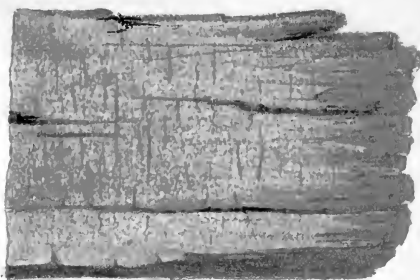
*P. Ravenelii*. C.



13.

*P. quercina* (Fr.)

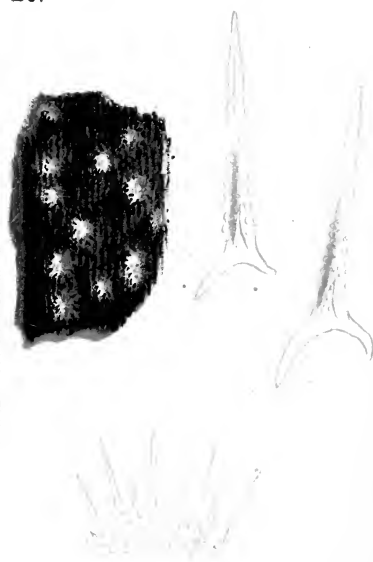
14.

*P. flavido-alba* C.

15.

*P. velutina* (Fr.)

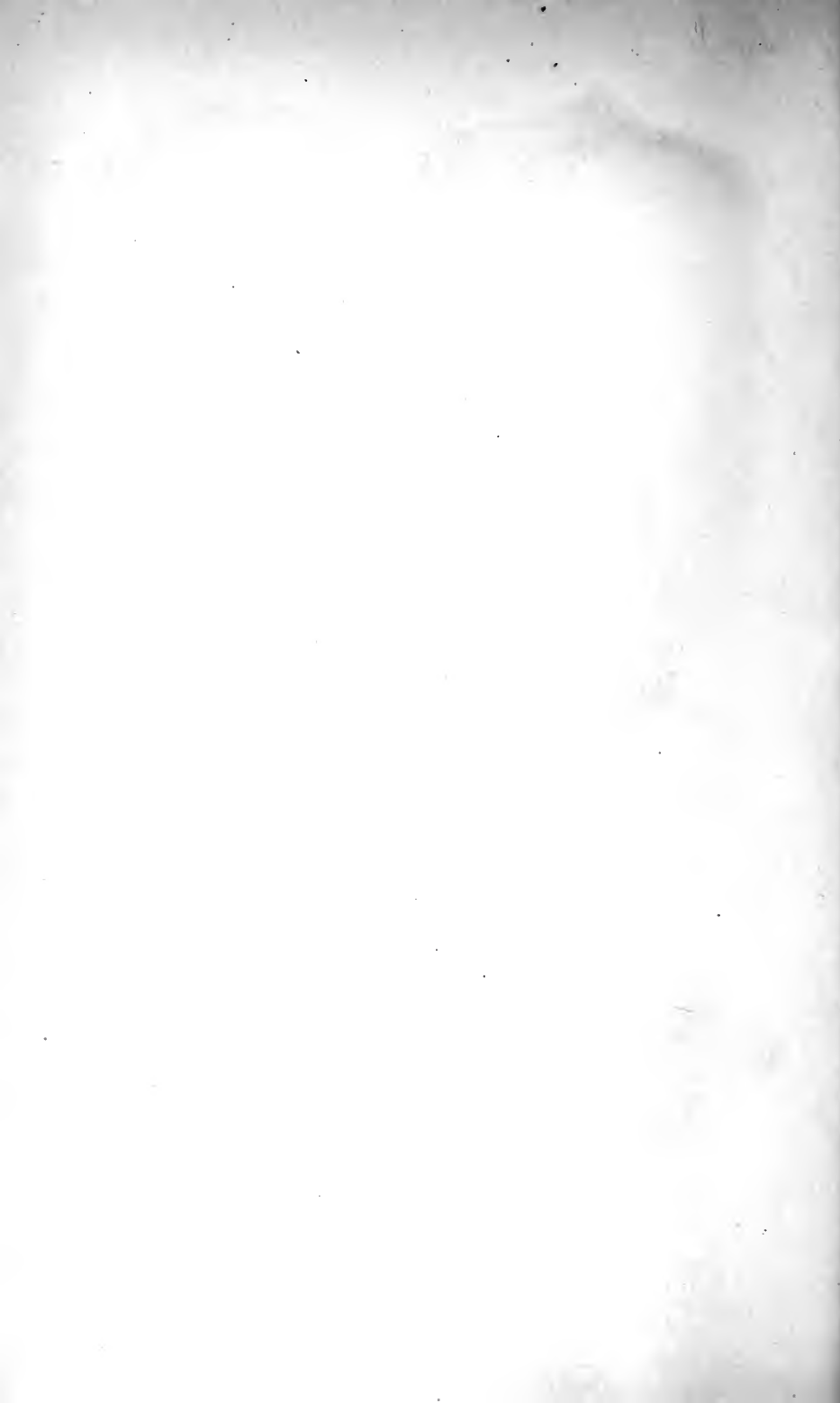
16.

*P. sparsa* (B&Br.)



1. *Agaricus (Stropharia) Percevalii* B&Br

2. *Hygrocybe lunathus* Fr.

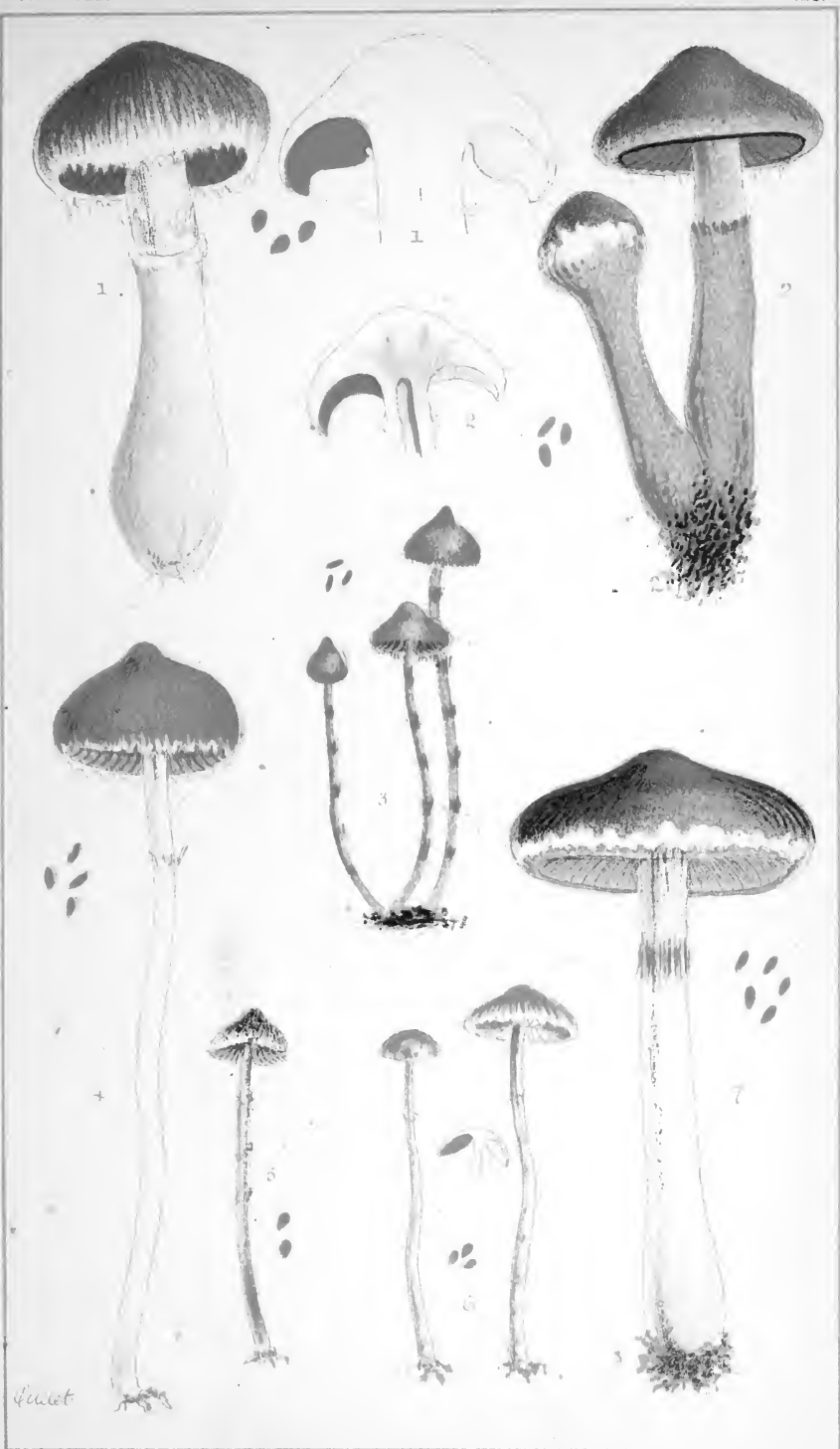




1. *Cortinarius crocolitus* Q. 2. *Cort. imbutus*. Fr.

3. *Cort. dactyloides* P.





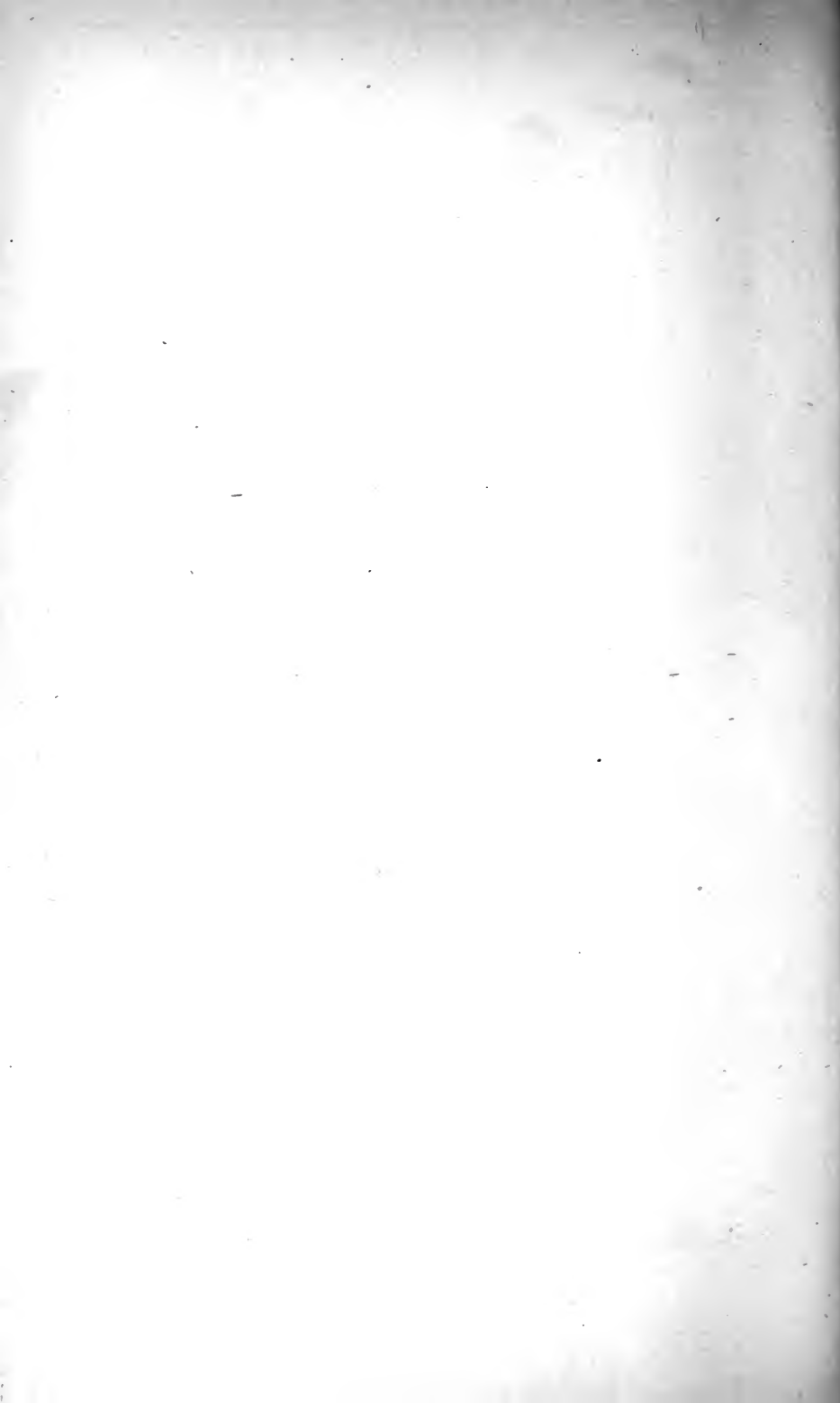
1. *Cort. impennis* Fr. 2. *Cort. arenarius* Q. 3. *Cort. Cockei* Q.
 4. *Cort. scandens*, Fr. 5. *Cort. flabellus* Fr. 6. *Cort. fallax* Fr.
 7. *Cort. saturninus* Fr.





1. *Cortinarius obtusus* Fr. var. *gracilis*.

2. *Hygrophorus cossus* Fr.



with the basidia, much larger, of a broadly fusiform shape, springing from the same stratum as the basidia, but extending far beyond them, above the surface of the hymenium, for at least half their length. These bodies are not of the nature of setæ, but are obtuse at the apex, hyaline, uncoloured, and externally rough with projecting warts, which cover the whole surface above the hymenium. In this form of hymenium we have the analogue of that which prevails in *Hymenochæte*, the variations being that the projecting bodies are broadly fusiform or lanceolate, and not setæform, are hyaline and not coloured, and are externally rough instead of smooth.

A second example of this same type of structure will be found in another species equally well known and common, *Corticium cinereum*, Fr., but the projecting bodies, or metuloids, as they might be termed, are shorter, still narrowed towards each extremity, and externally rough.

The same very distinct character will be found in the hymenium of *Stereum disciforme*, Fr., and also *Stereum papyrinum*, Mont., *Corticium aschistum*, Berk. & Curt., *Corticium carneum*, Berk. & Cooke, *Corticium lilacinum*, Berk. & Br., and *Corticium fumigatum*, Thuemen, which latter is only a form of *Corticium cinereum*, Fr.

All the arguments which could be adduced in favour of *Hymenochæte* would apply equally to the separation of these forms, under a distinct generic name, to which we have applied that of *PENIOPHORA*, in allusion to the shuttle shaped bodies shown to be peculiar to the hymenium. Should it not be considered advisable to adopt a new generic name for these abnormal species of *Stereum* and *Corticium*, they will at least have to be brought together into *Hymenochæte* as a subgenus, leaving to *Stereum* and *Corticium* only those species which have a naked hymenium.

There is still one other form which the hymenium assumes in two species distinct from either *Hymenochæte* or *Peniophora*. The type of this form is *Hymenochæte veluticeps*, Berk. & Curt., a species from Cuba, and the other less strongly developed species is *Hymenochæte crocicereas*, Berk. & Br., from Ceylon. In the former of these the hymenium is abundantly velvety, as its name indicates, but this does not proceed from simple setæ, such as we have described to exist in *Hymenochæte*, but from pointed tufts of slender flexuous septate hairs which seem to be continuations of the fibrous substance of the subhymenial tissue, carried through the hymenium, and adhering together in conical tufts at the surface. These tufts are double the length of the longest setæ in any known species of true *Hymenochæte*, and the septate hairs are quite of a different character. In the second species the same structure is found, but on a very much reduced scale, the compound conical tufts of septate hairs not exceeding in length the setæ of *Hymenochæte pellicula*, B. & Br., which has perhaps the shortest setæ of any known species.

If these two species are still retained in *Hymenochæte*, they must

be relegated to a subgenus, and the generic character modified ; or perhaps better still, constituted into a genus under the name of *Veluticeps*, as *Veluticeps Berkleyana* and *Veluticeps crocicreas*.

With these observations, we may proceed to the enumeration of the species which we would include in the proposed new genus.

PENIOPHORA.* *Cke.*

Coriaceous, or sub-carnose, effused. Hymenium beset with short, rigid, uncoloured, rough, projecting cells (metuloids), which are attenuated upwards or subfusiform, and give to the surface a velvety appearance.

1. *Peniophora quercina*. (*Fr.*) Pl. 125, fig. 13.

Metuloids fusiform (about $\cdot 07 \times \cdot 012$ mm.). *Corticium quercinum*, Fr. "Hym. Eur.," 653.

Europe, &c.

2. *Peniophora papyrina*. (*M.*) Pl. 124, fig. 9.

Metuloids shortly fusiform (about $\cdot 035 \times \cdot 012$ mm.). *Stereum papyrinum*, Mont. Syll., p. 178.

Australia, Ceylon, Brazil, &c.

3. *Peniophora Habgallæ*. (*B. & Br.*) Pl. 124, fig. 10.

Metuloids narrowly fusiform, attenuated and smooth above (about $\cdot 07\text{--}\cdot 08 \times \cdot 0125$ mm.). *Corticium Habgallæ*, B. & Br. "Journ. Linn. Soc." xiv., p. 72.

Ceylon.

4. *Peniophora aschista*. (*B. & C.*) Pl. 122, fig. 3.

Metuloids obclavate, smooth above, slender ($\cdot 08\text{--}\cdot 09 \times \cdot 008$ mm.). *Corticium aschistum*, B. & C., in "Grevillea" ii., p. 3.

United States.

5. *Peniophora Berkeleyi*. *Cke.* Pl. 122, fig. 4.

Metuloids obtusely conical (about $\cdot 04 \times \cdot 014$ mm.), *Corticium aschistum*, B. & C. (in part), in Herb. Berk.

Nicaragua.

6. *Peniophora lilacina*. (*B. & Br.*) Pl. 123, fig. 5.

Metuloids obclavate, obtuse (about $\cdot 06 \times \cdot 015\text{--}\cdot 018$ mm.), *Corticium lilacinum*, B. & Br., "Journ. Lin. Soc.," xiv., p. 70.

Ceylon.

7. *Peniophora disciformis*. (*Fr.*) Pl. 122, fig. 2.

Metuloids fusiform (about $\cdot 08 \times \cdot 015$ mm.) *Stereum disciforme*, Fr. "Hym. Eur.," p. 642.

Europe, &c.

8. *Peniophora cinerea*. (*Fr.*) Pl. 123, fig. 8.

Metuloids shortly and obtusely fusiform ($\cdot 03\text{--}\cdot 04 \times \cdot 01\text{--}\cdot 012$ mm.), *Corticium cinereum*, Fr. "Hym. Eur.," 654. *Corticium fumigatum*, Thüm. Myc. Un., No. 513.

Europe, &c.

9. *Peniophora tephra*. (*B. & C.*) Pl. 123, fig. 6.

Metuloids subconical ($\cdot 02\text{--}\cdot 025 \times \cdot 012\text{--}\cdot 014$ mm.), *Corticium tephrum*, B. & C., "Journ. Linn. Soc.," x., p. 336.

Cuba; Australia.

* From *πήμων*, a shuttle.

10. *Peniophora Ravenelii*. Cke. Pl. 124, fig. 12.

Metuloids obclavate ($\cdot 03\text{--}\cdot 035 \times \cdot 008\text{--}\cdot 01$ mm.), *Corticium auberianum*, Rav. No. 1369, not Montagne.

United States.

The true *Corticium auberianum*, Mont., is destitute of metuloids.

11. *Peniophora carnea*. (B. & Cke.) Pl. 124, fig. 11.

Metuloids obtusely fusiform ($\cdot 04 \times \cdot 012$ mm.), *Corticium carneum*, B. & Cke., in "Grevillea," vii., p. 1.

Texas; California.

12. *Peniophora Ayresii*. (Berk.) Pl. 122, fig. 1.

Metuloids broadly fusiform, very large ($\cdot 012 \times \cdot 02\text{--}\cdot 025$ mm.), *Corticium Ayresii*, Berk., in Herb.

Mauritius.

13. *Peniophora flavido-alba*. Cke. Pl. 125, fig. 14.

Effused, immarginate, pale sulphury-yellow, or pale ochre, even, cracking transversely in drying, rather thin. Metuloids elongated fusiform ($0\cdot 1 \times \cdot 015$ mm.).

On *Myrica cerifera* (Rav., 2529).

United States.

14. *Peniophora limitata*. (Fr.) Pl. 123, fig. 7.

Metuloids fusiform, small ($\cdot 025\text{--}\cdot 03 \times \cdot 008$), smooth above, *Corticium limitatum*, Fr. "Hym. Eur.," p. 656.

Europe.

15. *Peniophora velutina*. (Fr.) Pl. 125, fig. 15.

Metuloids scarcely rigid, fusiform ($\cdot 05\text{--}\cdot 06 \times \cdot 01$ mm.), *Corticium velutinum*, Fr. "Hym. Eur.," 650.

Europe.

Rather an aberrant form. The metuloids more resemble hairs than the bodies met with in other species.

16. *Peniophora sparsa*. (B. & Br.) Pl. 125, fig. 16.

Metuloids attenuated upwards, expanded, and often forked at the base ($\cdot 08 \times \cdot 01$ mm.), *Corticium sparsum*, B. & Br., "Journ. Linn. Soc.," xiv., p. 72.

Ceylon.

Another aberrant form.

In *Corticium ephesium*, B. & C., and two or three other species, there are projecting cells or basidia on the hymenium, but these have quite a different character from the bodies which we have termed metuloids.

FUNGI BRITANNICI EXSICCATI.

CENT. VII.

No.

601. *Polyporus sulphureus*. Fr.

602. *Polyporus Schweinitzii*. Fr.

603. *Polyporus spumosus*. Fr.

604. *Polyporus chioneus*. Fr.

605. *Polyporus abietinus*. Fr.

No.

606. *Trametes mollis.* Fr.
 607. *Corticium sulphureum.* Fr.
 608. *Tremellodon gelatinosum.* Fr.
 609. *Tremella albida.* Huds.
 610. *Tremella epigæa.* Fr.
 611. *Cantharellus lobatus.* Fr.
 612. *Hygrophorus foetens.* Phil.
 613. *Didymium squamulosum.* Fr.
 614. *Lycogala epidendrum.* Fr.
 615. *Trichia varia.* Pers.
 616. *Cyathus striatus.* Hoffm.
 617. *Septoria mori.* Lev.
 618. *Micropera drupacearum.* Lev.
 619. *Dichomera Saubinetii* (Mont.)
 620. *Diplodia lantanæ.* Fckl.
 621. *Diplodia ligustri.* West.
 622. *Diplodia salicina.* Lev.
 623. *Cytispora rubescens.* Fr.
 624. *Melanconium sphæroideum.* Lk.
 625. *Pestalozzia Guepini.* Desm.
 626. *Cheirospora botryospora.* Corda.
 627. *Cryptosporium coronatum.* Fckl.
 628. *Myrothecium roridum.* Tode.
 629. *Torula graminum.* Link.
 630. *Torula herbarum.* Link.
 631. *Sporidesmium lepraria.* B.
 632. *Monilia hesperidea.* Sacc.
 633. *Puccinia millefolii.* Fckl.
 634. *Puccinia striola.* Link.
 635. *Puccinia glechomatis.* D.C.
 636. *Puccinia scirpi.* Link.
 637. *Uromyces scrophulariæ.* Lib. (=U. concomitans.
 Berk.)
 638. *Puccinia centaureæ.* D.C.
 639. *Puccinia lapsanæ.* Fckl.
 640. *Podisoma sabinæ.* Fr.
 641. *Macrosporium commune.* Rabh.
 642. *Helminthosporium stemphylioides.* Corda.
 643. *Sporotrichum resinæ.* Fr.
 644. *Zasmidium cellare.* Fr.
 645. *Peziza ammophila.* DR. & M.
 646. *Peziza firma.* Pers.
 647. *Peziza crucipila.* C. & Ph.
 648. *Peziza granulata.* Bull.
 649. *Peziza Adæ.* Sadler.
 650. *Peziza succosa.* Berk.
 651. *Peziza macrocystis.* Cke.
 652. *Peziza constellatio.* B. & Br.

No.

653. *Peziza benesuada*. *Tul.*
 654. *Peziza fusca*. *Pers.*
 655. *Peziza scirpi*. *Rabh.*
 656. *Patellaria rhabbarbarina*. *B. & Br.*
 657. *Ascobolus subfuscus*. *Boud.*
 658. *Bulgaria purpurea*. *Fckl.*
 659. *Cenangium cerasi*. *Fr.*
 660. *Dermatea Houghtoni*. *Phil.*
 661. *Stictis nivea*. *Pers.*
 662. *Hysterium pinastri*. *Schr.*
 663. *Labrella Ptarmicæ*. *Desm.*
 664. *Phacidium repandum*. *Fr.*
 665. *Hypocrea gelatinosa*. *Tode.*
 666. *Hypocrea rufa*. *Fr.*
 667. *Hypomyces torminosus*. *Tul.*
 668. *Isothea saligna*. *Fr.*
 669. *Melanconis stilbostoma*. *Tul.*
 670. *Diatrype strumella*. *Fr.*
 671. *Diatrype nucleata*. *Curr.*
 672. *Valsa Kunzei*. *Fr.*
 673. *Melogramma Bulliardii*. *Tul.*
 674. *Diatrype bullata*. *Fr.*
 675. *Eutypa spinosa*. *Fr.*
 676. *Dichæna faginea*. *Fr.*
 677. *Valsa stellulata*. *Fr.*
 678. *Diaporthe quercina*. *Nke.*
 679. *Valsa Curreyi*. *Nke.*
 680. *Valsa pulchella*. *Pers.*
 681. *Sphæria pulveracea*. *Ehr.*
 682. *Sordaria curvula*, *var. aloides*. *Wint.*
 683. *Sordaria decipiens*. *Winter.*
 684. *Sphæria cirrhosa*. *Pers.*
 685. *Diaporthe aceris*. *Nke.*
 686. *Diaporthe epilobii*. *Fckl.*
 687. *Diaporthe pardalota*. *Mont.*
 688. *Sphæria rubella*. *P.*
 689. *Sphæria (Pleospora) Eleocharidis*.
 690. *Sphæria (Pleospora) aparines*. *Fckl.*
 691. *Sphæria (Pleospora) samaræ*. *Fckl.*
 692. *Pyrenophora trichostoma*. *Fr.*
 693. *Sphæria (Pleospora) herbarum*. *P. On Malva.*
 694. *Sphæria (Pleospora) herbarum*. *Pers. On Galium.*
 695. *Sphæria (Pleospora) herbarum*. *P. On Lucerne.*
 696. *Sphæria (Pleospora) herbarum*. *P. On Lapsana.*
 697. *Sphærella Taxi*. *Cke.*
 698. *Stigmatea Alchemillæ*. *Grev. (=Venturia.)*
 699. *Sphæria (Pleospora) infectoria*. *Fckl.*
 700. *Sphærella peregrina*. *Cke.*

BRACHYTHECIUM SALEBROSUM. HOFFM.

The late Mr. G. Hunt, of Manchester, and myself, took some pains years ago to ascertain, if possible, the reality of veritable *B. salebrosum*, Hoffm., having been found in Britain, but we failed to get satisfactory evidence.

It is patent to all, even to amateur Bryologists as ourselves, that *B. glareosum*, Bruch., *B. mildeanum*, Schpr., and *B. compestre*, Bruch., have been successively regarded as forms of *B. salebrosum*, Hoffm.

Although I have strong doubts of the value of *B. mildeanum* as a distinct species from the lax forms of the variable true *B. salebrosum*, I leave to others to decide that knotty point.

I do not think many will dispute *B. glareosum* to rank as a truly distinct species—its long leaves, with twisted filiform points, separating it by an obvious character.

Now, the localities cited by Wilson, in his "Bryologia Britannica," 1855, p. 338, are for *B. salebrosum*, Loch of Forfar, Drummond; Castle Howard, Mr. Spruce; Sussex, Mr. Mitten.

On enquiring, Mr. Hunt found the evidence as to these first two was very shadowy, and Mr. Mitten has abandoned his Sussex habitat.

We have in Sussex *B. mildeanum*, *verum*, but extremely local, and only barren, in a narrow belt on the northern base of our chalk downs, and Mr. Mitten told me he had gathered the same on the coast west of Brighton.

Of the true specific value of Sussex forms of *B. campestre*, I can say nothing. My fertile plants Mr. Mitten pronounced identical with his; but Mr. Hunt regarded these as a rigid form of *B. mildeanum*; perhaps from growing principally on clay, and making the outline of the leaf an isosceles triangle, of which the base is one-third to one-fourth of its length.

On Ben Lawers, in Perthshire, in July, 1874, I gathered a caespitose blackened *Brachythecium*, with somewhat incurved branches. I am indebted to Dr. Braithwaite for pointing out its identity with *B. salebrosum*, and he has it also from the same mountain. My plant occurred near Creag á Bhuic, on a shady rock, with *Weissia crispula* and *Pseudoleskea atrovirens*, and at an elevation of about 3,000 feet.

This Ben Lawers form is very near a plant I found last year on rocks close to Lac d'Espingo, in the Pyrenees, 6,152 feet. A locality given by Spruce for *Camptothecium aureum*, Lagasa, which I could not find. A singular habitat for *C. aureum*, a purely Southern plant, said to be abundant at Madrid, but one would not have supposed it should have been found at Lac d'Espingo, almost a glacial lake.

Brighton.

G. DAVIES.

EXPERIMENTS ON THE COLORIFIC PROPERTIES OF LICHENS.

By W. LAUDER LINDSAY, M.D., F.R.S.E., F.L.S.

The subject of the colours or colouring matters contained in, or educible from, Lichens—to which I directed attention about 25 years ago*—has recently re-acquired considerable interest or importance in connection with, or in relation to,

1. The Introduction of Colour-tests, *as characters for species* in Lichens; †
2. The development of *fast dyes from Lichens*, capable of competing successfully with the coal tar and other recent products of the chemist's laboratory; ‡ and
3. The continued domestic use of Lichens as Dye-stuffs in our own country. §

So long ago as 1853, ¶ in connection with an experimental inquiry on the economical applications of the Lichen-dyes, I pointed out the extreme unsatisfactoriness of our knowledge of the *Chemistry* of these dyes; and the progress of science in this direction has not since been such as to enable me to modify the strong opinion then expressed. ¶ During the last 25 years the principal changes in our knowledge of the chemistry of these colouring matters consist in—(1) the addition of sundry (supposed or really) new substances, which addition confuses to a still greater degree the previous confusion of *names*; and (2) certain proofs of the correctness of an opinion I was long ago led to hazard, that several, at least, of the bodies described by different chemists as differing trivially in constitution or characters, would prove to be referable to the same substance.** I have more than once pointed out the necessity that exists for a *new* series of researches on the chemistry of the Lichen-colouring matters, to be undertaken conjointly by

* "Experimental Researches on the Tinctorial Properties of Lichens." Proceedings of Botanical Society of Edinburgh, 1853-4-5; "North British Agriculturist," 1853-4; "Phytologist," 1853-4; "Edinburgh New Philosophical Journal," 1854-5.

† "Chemical Reaction as a Specific character in Lichens." "Journal of Linnæan Society, Botany," vol. xi, p. 36.

‡ "Present uses of Lichens as Dye-stuffs." Report of British Association, 1867; Transactions of Sections, p. 40; Seemann's "Journal of Botany," vol. vi (1868), p. 101.

§ "Present domestic use of Lichen Dye-stuffs in the Scottish Islands and Highlands." Seemann's "Journal of Botany," vol. vi. (1868), p. 84.

¶ "Phytologist." Vol. iv. (1854), p. 905.

¶ "Lichen Dyes." Hardwicke's "Science Gossip," December, 1867, p. 266; and paper on "Present uses of Lichens as Dye-stuffs" (*supra* citat).

** In his latest contribution to Lichen-Chemistry, Stenhouse ("On some Varieties of *Orchella* Weed and the products obtained from them"—"Journal of the Chemical Society," May, 1867) admits that his *Erythric* acid is the same as Schunck's *Lecanoric* acid.

competent chemists and lichenologists. Not only are *new* fields of research open, but the need of a *revision* of all previous analyses is even more evident. Chemists themselves are forced to make this admission ;* but the subject of the Chemistry of the Lichens has not as yet proved a sufficient counter-attraction to the innumerable other interesting problems that are daily being exposed for solution in the wide domain of organic chemistry. Meanwhile, the crude researches of lichenologists may serve to pave the way for the subsequent more scientific and precise analyses of chemists, by indicating the *directions* in which chemical inquiry is likely to prove useful or successful. Quite recently, moreover, a strong opinion as to the utility of researches on the Lichen colouring matters—of the character of those formerly published by myself—has been expressed by the highest living authority on the subject of general Lichenology, viz., Von Kempelhuber, of Munich;† while, in the long interval that has elapsed since the publication of my first series of researches, no other experimentalist has occupied the same wide field.

The foregoing along with other considerations induce me to submit the results of another more systematic and complete series of experiments, supplementary to those presented in 1853-4-5. These results include, or consist of, a general inquiry into colour-development or colorific property in the whole family of Lichens. The experiments in question are on the one hand a repetition, and on the other an extension, of my former series of experiments,‡ and illustrate generally the *colour-reactions* of Lichens. The results given are mainly those which are *positive*; they represent only a proportion of several hundred experiments, the majority of which led to no colour-reaction at all. In the present series of experiments I used a *solution* of the Lichen colorific principles or colouring matters in hot water or alcohol—boiling the Lichens, previously reduced to powder or minute fragments. My reason was that the majority, at least, of the said colorific or colouring principles or matters, while insoluble in cold and sparingly so in hot water, are readily soluble in cold or boiling *alcohol*.§ The reactions developed are thus the effects of re-agents on the *alcoholic or aqueous decoctions of the Lichen-thallus*.

In order to secure something like uniformity, if not precision, in the *nomenclature of the colours* obtained, I carefully compared them with the colour-specimens published in the little work of Syme (in

* Thus Professor Crum-Brown, of Edinburgh, to whom I proposed a joint *new* experimental inquiry, wrote me in Jan'y., 1867, "There is still . . . room for much further work."

† "Geschichte und Litteratur der Lichenologie" (1867), p. 423-4.

‡ "Phytologist," vol. iv. (1853), p. 1068.

§ This fact, the result of chemical research, is sufficient of itself to throw doubt on the possibility of properly educing colour-reaction by the mere application to the Lichen-thallus, or apothecium, of a drop of bleaching solution or liquor potassæ! *Vide* paper on "Chemical Reaction as a Specific Character" (*ob. cit.*).

connection with the once celebrated nomenclature of *Werner*), and in many cases I have added to my own nomenclature what appeared to me to be its equivalent in *Werner's* system. I have not deemed it necessary, for present purposes, to follow *Westring's* example and give *specimens* of the colours obtained. The fugitive* character, of at least many, of the Lichen-colouring matters renders it doubtful whether, for any purposes, such a series of samples can give an adequate idea of their brilliancy.

With a view further to secure a fixed standard of comparison—to obtain authenticity and uniformity of nomenclature in the Lichens operated on, I have used as the basis of my experiments in great measure the specimens contained in the published fasciculi of *Mougeot* and *Nestler* (Vosges district of France, published between 1810 and 1850), and of *Schärer* (Switzerland, published between 1823 and 1852). These specimens, it is to be observed, are therefore comparatively *old*. But I have occasionally made parallel series of experiments on *fresh* Lichens in their own places of growth, with, on the whole, similar results. Thus, while travelling in New Zealand in 1861—with a view to test their comparative colorific capabilities—I submitted to experiment on the small scale 15 Otago lichens from various localities in that province, belonging to the following cosmopolite species, on British and European specimens whereof I had, in former years, similarly experimented at home, viz., *Lecanora parella*, *Parmelia saxatilis*, *P. perlata*, and *P. perforata*. The testing process here was simple ammoniacal maceration, but under disadvantageous conditions. The experiments were conducted in small *corked* phials; due access of oxygen was thus prevented; and without free access of this gas—as contained in atmospheric air—the full development of colour cannot occur. Nevertheless, within generally two or three days, colours were obtained of similar kind and richness to those procured from the same species of Lichens at home.† I may add that other experimentalists, operating in the same simple and rudimentary way in other countries, appear to have ob-

* This may be judged of by an inspection of the suites of *Illustrations of Lichen-dyes* contained in the Museums of Economic Botany of Edinburgh or Kew, or the Museum of Science and Art, Edinburgh.

† The suite of colour-specimens so manufactured—with a parallel series of British samples—under the designation of “*Illustrations of Lichen-dyes*,” was handed over to the New Zealand Exhibition of 1865 at Dunedin (Sect. 1, Class 4). My object was to assist in stimulating the colonists to devote some attention to the development of the industrial resources of their adopted country—to the utilization of the vegetable products of their own province. I was strongly of opinion, moreover, that such a Colonial Exhibition at so early a stage in the history of the colony was calculated to be of immense benefit in hastening and helping its substantial prosperity. It was with pleasure, therefore that I further contributed to the said Exhibition, suites of

I. *Fibres*, which might be substituted for current materials in the manufacture of paper, cordage, carpeting, or other textile fabrics; and

II. *Dyes* produced from the common native weeds of Scotland.

tained similar results. Thus a correspondent in Montreal (Mr. A. T. Drummond) wrote me, in September, 1869, as follows:— "*Parmelia Borreri*, which is very common on trees, rails and gneiss, yields on ammoniacal maceration a purple dye. The *Umbilicarias*, which are frequent among the Laurentian rocks, yield red by the same process."

[The foregoing is but a brief introduction to a voluminous series of elaborate tables of details of experiment, which it is not necessary, even were it easy, to publish in "Grevillea."]

NEW BRITISH LICHENS.

Communicated by the REV. J. M. CROMBIE, F.L.S.

The following interesting discoveries by Mr. Larbalestier in N.W. Ireland, have recently been recorded by Dr. Nylander in the "Flora," 1879, pp. 201-207, and 220-224:—

1. ***Lecanora umbraticula*.** *Nyl.*—Thallus greenish, thin, subleprous; apothecia carneo-luteous or subluteous, somewhat plane, biatorine, whitish within; spores 8 μ , fusiform, usually simple, sometimes thinly 1-septate, 0.008-16 mm. long, 0.002-3 mm. thick; paraphyses submoderate, epithecium and hypothecium colourless. Hymenial gelatine, wine-red with iodine.

On shady calcareous rocks. Kylemore, Galway. Closely allied to *L. albocarnea*.

2. ***Lecidea alborubella*.** *Nyl.*—Thallus whitish or greenish-white, very thin or evanescent; apothecia yellow or reddish flesh-coloured, somewhat convex, immarginate, colourless within; spores 8 μ , bacilliform or fusiformi-bacillar, 3-septate, 0.014-21 mm. long, 0.002 mm. thick, paraphyses slender, epithecium and hypothecium colourless. Hymenial gelatine, tawny wine-red with iodine.

On calcareous rocks. Kylemore. A peculiar species, belonging to the section of *Lecidea bacillifera*. Nylander observes that hymenicolle gonidia are sometimes present, as is the case with other *Lecideas*.

3. ***Lecidea byssoboliza*.** *Nyl.*—Thallus greenish or greyish-green, opaque, very thin, continuous, indeterminate; apothecia carneo-luteous, somewhat prominent, the margin at length undulated (paler or scarcely distinct), colourless within; the base externally circumpubescent (radiating), with a shortish white byssus; spores 8 μ , fusiform, 3-5 septate, 0.023-27 mm. long, 0.003-4 mm. thick, paraphyses slender, epithecium and hypothecium colourless. Hymenial gelatine, pale-bluish, and then tawny wine-coloured with iodine.

On calcareous and schistose rocks in a cave at Kylemore. Belongs probably to the section of *L. cupreorosella*, but the spermogones not seen.

4. **Lecidea alabastrites.** *Nyl.*—Thallus whitish or greenish-white, very thin, continuous or thin, minutely subgranulose; apothecia whitish, somewhat plane, margined (the margin scarcely prominent, obsoletely paler), colourless within; spores 8 μ , fusiform, 3-5 septate, 0.018-24 μ long, 0.005-7 μ thick, paraphyses not discrete, epithecium and hypothecium colourless. Hymenial gelatine, bluish with iodine, and then (especially the thecae) dark wine-coloured.

Amongst mosses on the bark of trees at Kylemore. Allied to *L. sphaeroides*.

5. **Lecidea perustula.** *Nyl.**—Thallus pale, minutely areolate, areolæ plane, innate, somewhat scattered on a black thin hypothallus, which is at length minutely areolato-rimose, smooth, determinate; apothecia black, innate, somewhat plane; spores 8 μ , colourless, oblongo-ellipsoid, 0.006-8 μ long, 0.003 μ thick, paraphyses not very well discrete, epithecium bluish-brown, hypothecium brown. Hymenial gelatine, at first slightly bluish and then tawny wine-red with iodine.

On siliceous rocks. Kylemore. A minute species, belonging to the section of *L. fumosa*.

6. **Chiodecton subdiscordans.** *Nyl.*—Thallus whitish, thin, subgranuloso-continuous; apothecia black, simple or at length divided, on pulvinato-plane, rotundato-oblong, or subdeformed stromata; spores 8 μ , oblong, 3-septate, 0.011-16 μ long, 0.0035 μ thick (thicker at the upper apex), paraphyses not distinct, epithecium somewhat blackish, hypothecium blackish. Hymenial gelatine bluish, and then sordid yellow with iodine.

On moist rocks, near Kylemore. A very peculiar and distinct species, most nearly allied to the American *Ch. separatum*, *Nyl.*

7. **Arthonia subexcedens.** *Nyl.*—Allied to *A. complanata*, Fée, and scarcely differing except in the constantly rather larger spores; spores oblongo-oviform, 5-6 septate, 0.025-32 μ long, 0.009-12 μ thick, and at length often brownish; spermatia acicular, straight, 0.007 μ long, 0.0005 μ thick.

On the bark of holly, near Kylemore. Perhaps only a subspecies of *A. complanata*.

8. **Verrucaria conturmatula.** *Nyl.*—Thallus greyish, maculate; apothecia minute, depressed, subconfluent, the pyrenium dimidiate, black; spores 8 μ , ellipsoid or oviformi-ellipsoid (sometimes obsoletely 1-septate), 0.011-14 μ long, 0.005-6 μ thick, paraphyses none. Hymenial gelatine, wine-reddish with iodine.

On quartzose stones in a rivulet at Kylemore, associated with

* This has since been ascertained to be *Lecidea macula*, Tayl., in "Fl. Hib.," which consequently has priority.

Lecanora lacustris. A peculiar species, comparable with *V. discreta*, Mtzl.

In addition to the above, Nylander, in his appended observations, remarks also on some other British Lichens, as follows :—

1. ***Lecidea delutula***. *Nyl.*—This agrees in the structure and spores with *L. Arnoldi* (Kphb.), of which it may be a sub-species, but the thallus is greyish-green, very thin (at length rimose), the apothecia pale carneo-luteous, subbinate, usually gyalectoid; spores 0·012-16 mm. long, 0·004-5 mm. thick.

On moist siliceous ferruginous rocks. Kylemore.

2. ***Lecidea thiopsora***. *Nyl.*—In “Flora,” 1876, p. 573. This is only a form of *L. pulvinata*, Tayl., with the thallus somewhat sulphureous.

3. ***Opegrapha hysteriiformis***. *Nyl.*—This is scarcely more than a larger form of *Op. atrula*, *Nyl.*, in “Flora,” 1877, p. 565.

On schistose rocks. Kylemore.

4. ***Opegrapha saxigena* f. *clarescens***. *Nyl.*—Thallus whitish or greenish-white, very thin, continuous, apothecia usually smaller than in the type.

On rocks. Kylemore (Larbalestier); also in Appin (Crombie), 1876.

5. ***Verrucaria prominula** *viridans***. *Nyl.*—Thallus pale or greenish, thin, continuous, subrimulose; spores 0·010-12 mm. long, 0·007-9 mm. thick.

On maritime rocks, near Kylemore.

VITRICOLE LICHENS AND THE SCHWENDENERIAN HYPOTHESIS.

In the “Flora,” 1879, pp. 303-4, Dr. Nylander has a note upon Vitricole Lichens, from which we give the following extract, which bears directly upon Schwendenerianism, and will, no doubt, be interesting to the readers of “Grevillea,” under whose notice the subject in other aspects has recently been so lucidly brought by the Editor.

“After observing that he had already in the ‘Flora,’ 1877, p. 356, and 1878, p. 247, stated that it was useless to study the germinations of Lichens from spores cultivated at home,* because in Nature itself not only the earliest stages of these germinations, but also the whole development of Lichens can readily be perceived on quartzose rocks and smooth bark of trees,† Nylander proceeds to notice that the same may still more easily be observed on glass which has been exposed for a long series of years in districts where Lichens are of common occurrence. “There, in the very pure sur-

* *Vide* also Cromb. in “Pop. Sc. Rev.,” 1874, pp. 267-8.

† To this also may be added, on mortar of walls and houses, as in the suburbs of London.—J. M. C.

face of the glass, we have, under the microscope before our eyes, numerous germinations and prothalline formations, and then gradually advancing the beginnings of the primary glomeruli of the thallus (as are sufficiently well figured in 'Tul. Mem. Lich.,' t. 3, f. 3), and behold the whole process of evolution from the germinating spore to the perfect thallus, and at length to the formation of the perfect apothecium. All of these are seen to be formed of themselves—that is, by an innate power or impulsion of procreation, which is inherent in the spore, the only aiding materials being those lent by the atmosphere, especially rain water. Upon the very pure glassy substratum where these vital phenomena go on; no trace of any *Protococcus* (or *Pleurococcus*) nor of any element of a heterogenous thallus is detected in the vicinity, although we have examined innumerable examples of such germinations in very favourable circumstances, especially in *Lecanora galactina*, Ach., *Lecanora exigua*, Ach., and *Lecidea alboatra* (Hoffm.), growing upon glass. The prothalline commencements of *Lecanora exigua* radiate dendritically around the spores, and are of a blackish colour, forming the hypothallus, in which minute cellulose thalline glomeruli are produced, presently exhibiting gonidia forming themselves in the cells (as in 'Tul. Mem.,' l.c.); often also we see apothecia produced even in a very young plant. The same is the case with the beginnings of *Lecanora galactina*;* but here the hypothallus is white, consisting of white byssine appressed filaments, laterally apposite and contiguous. All these hypothalli are very closely agglutinated to the glass; and there are no traces whatever of any *Protococci* in connection with them."

These observations of themselves, in connection with Vitricole Lichens (which, in this country, we have only observed on broken pieces of bottles on garden wall tops, chiefly in Scotland), are amply sufficient to show how untenable is the Schwendenerian hypothesis, which, in the concluding words of Nylander's paper, is thus "reduced to the nothingness from which it ought never to have emerged."

J. M. CROMBIE.

PREPARATIONS OF LICHENS.

If the Schwendener theory of the dual nature of Lichens has done no other service, it has at least been the means of attracting attention to a sorely neglected group of cryptogamic plants, concerning which the majority, even of educated persons, were in profound ignorance. Like all other branches of Natural History, Lichens, as now understood through the medium of our improved microscopes, are very different to what they were fifty years ago. There are also other reasons which have given Lichenology an impetus forward in Britain, and chiefly the increased facilities for

* This I can entirely corroborate from my own observations on this species, as growing on mortar in the north suburbs of London.—J. M. C.

the pursuit of the study. Admirable sets of specimens, carefully determined by highly competent authorities, have been issued, and an excellent Lichen Flora has reached its third edition. That such a special scientific volume as Leighton's Lichen Flora should have reached a third edition, is a welcome surprise, and is, in itself, an evidence that the study of Lichenology must be extending. Another important aid to the prosecution of this study was noticed in our last number, which we advert to again, namely, the issue by Mr. W. Joshua, of Cirencester, of a series of microscopical mountings of Lichens, some of which it has now been our privilege to examine. There are three requisites which we contend that such a series should possess to ensure their complete success. They should be critically accurate in their determination. The series should be a thoroughly representative one, containing all the principal types; and the parts of such specimens selected for mounting should be those which are essential for educational purposes. To these we might add a fourth in the suggestion that the manipulation should be unimpeachable. As far as we have seen, we have every reason to believe that this series to which we allude, fulfils all these four conditions. Mr. Joshua is an old and experienced Lichenologist, enjoying the friendship and counsel of the best Lichenologists in the kingdom, and hence there is no room for doubt of the first condition being fulfilled. The list which we published of the species illustrated in the first portion of the series, will afford ample proof how the second condition is in course of fulfilment. An examination of some of the "slides" already issued, enable us to testify that the third and fourth conditions are satisfied as fully as the first and second. We have doubts whether any biologist can sit down to such mountings as those of *Lichina pygmaea*, *Pyrenopsis granatina*, *Collema biatorinam*, *Collema multipartitum* and *Omphalaria pulvinata*, without profound interest, and deep thoughtfulness being produced by their examination. Of course the dual hypothesis will come into one's mind, but thoughts and reflections far higher than such an hypothesis will soon crowd that into the background.

There are, perhaps, three classes of individuals to whom these preparations will be welcome. There are the Lichenologists, or those ambitious of becoming such, who would study them as illustrations of genera and species, and they will be glad to have just what they require prepared for their use, without all the labour and the many failures of inexperience, perhaps, or at least without a great expenditure of time necessary to make such preparations. Then there are the general students of biology, who are neither mycologists or lichenologists, but who desire to see and learn something of the structure of all the lower orders of plants. Of course such persons will have to depend for their best help on such series as the present, and those of a kindred nature in other orders. Finally, there are the curious, who want to see and possess new objects, rare, beautiful, and true. To them it matters little what they are called, so long as they are curious, or beautiful, or

rare, or illustrative of some subject which has been under conversation or controversy in scientific circles. If we mistake not, here is material to satisfy the requirements of these three classes, and we are very much mistaken if the most decided *dilettante* does not discover that the sections of Lichens which heretofore were only to him an empty name, are such marvellous and interesting pages in the book of life, that some of the lines will become imprinted upon his brain for ever.

THE LICHEN-FLORA OF GREAT BRITAIN, IRELAND, AND THE CHANNEL ISLANDS.*

Whether the highly fanciful views of Schwendener, Bornet, and other investigators, which reduce all Lichens to parasitic Fungi, preying on stray Algæ, and represent them as performing feats of capture and voraciousness, best illustrated by members of the animal kingdom, be accepted or not, this book on British Lichens will be found indispensable to the student of these plants. Lichens remain Lichens, in spite of this incongruous theory, presenting as distinct an individuality as is seen in any other branch of the vegetable kingdom, and will continue to offer a deeply interesting field of investigation to the Cryptogamic botanist. The rapid strides in the advance of science in this country, made within the last half-century, is nowhere more conspicuous than in the department of which this work treats. In the fifth volume of "English Flora," published in 1833, the whole of the known British species of Lichens numbered 413, whereas in this work of Mr. Leighton they number 1,133, exclusive of the forms and varieties. When we consider what a comparatively small proportion of the botanists of Britain have given attention to these humble plants, this progress is very surprising. Nor is it to be supposed the field is exhausted. Treasures doubtless remain to reward the industry of future students. Some of the oldest living botanists, who imagined they had exhausted the British Lichen Flora, and turned their attention to other classes of plants, view, with a certain degree of impatience, the multiplication of new species, and would throw doubt on their value; but this must be attributed to the vexation of being left behind, as will inevitably happen if we stand still, by the advancement of science. We have, in Mr. Leighton's new work, a complete diagnosis of the 1,133 species, also of the varieties and forms of these, which make a total of 1,718. A new feature in this edition is the microscopic measurement of the spores. Notwithstanding the great variation in the size of spores in the same species, carefully taken measurements afford valuable help in determining a plant, for this variation is

* Rev. W. A. Leighton. Third edition. Shrewsbury, 1879.

usually within certain fixed limits. The perfection to which modern microscopes have been brought, renders the process of measurement comparatively easy. In the work before us the late Mr. Mudd's measurements by the fractions of an inch are quoted, but these will require careful comparison with those of Nylander, Fries, jun., and the author's own. It is much to be regretted that English workers do not adopt the millimetre in preference to the inch, as it is universally used on the Continent, and takes up less room when written. It is impossible, in a brief notice such as our space confines us to here, to point out all the valuable features of this work, but we may say, in conclusion, that references are given under each species to published figures of it, and to exsiccata in which it occurs; its geographical distribution, with the localities where it has been found, and the names of those who have found it are specified. Chemical reactions are indicated by fixed symbols, explained fully in the introduction. A glossary of terms used, together with a copious index, render this work as complete as can be desired, and we wish it every possible success.

UNDESCRIBED FUNGI IN THE KEW HERBARIUM.

By M. C. COOKE.

Ustilago australis. *Cke.*

Sporis atris, in germenibus enatis, subglobosis vel angulatis et difformibus, lævibus. ($\cdot 008\text{--}\cdot 009$ mm. diam.).

In ovaries of *Eriachne*. Australia. (Muller.)

Professor Fischer de Waldheim is of opinion that this is clearly distinct from any described species, and not a *Tilletia*, which in habit it resembles.

Puccinia sclerotioidea. *Cke.*

Amphigena. Soris atro-purpureis, epidermide cinctis, compactis, durissimis. Pseudosporis clavatis, constrictis, læte brunneis, episporio supra incrassato ($\cdot 045 \times \cdot 015$ mm.). Pedicellis persistentibus, hyalinis.

On leaves (probably some *Statice*). British Columbia. (Dr. Lyell.)

Puccinia Barbareae. *Cke.*

Gregaria, amphigena. Soris rotundatis, atris, epidermide cinctis. Pseudosporis late lanceolatis, forte constrictis, læte brunneis, lævibus ($\cdot 05 \times \cdot 016$ mm.), episporio supra incrassatis. Pedicellis hyalinis, subpersistentibus.

In company with *Æcidium barbareae*, D.C., on cruciferous plant. Oregon. (Dr. Lyall, 61.)

Corynelia tripos. *Cke.*

Cœspitoso-gregaria, insidens stromate lineari convexo-nigro. Peritheciis atris, supra attenuatis, dein apice incrassato-truncatis.

Ascis ovatis, longe stipitatis. Sporidiis triradiatis, brunneis (limbo $\cdot 012 \times \cdot 003$ mm.).

On *Podocarpus elongatus*, and *P. Thunbergii*. Cape.

Most distinct from *C. uberata*, Fr., which has globose sporidia.

Dothidea Halepensis. *Cke.*

Follicola, atra, prominula, convexa, lævis, cellulis paucis. Ascis ovatis. Sporidiis ellipticis, uniseptatis, fuscis ($\cdot 014 \times \cdot 005$ mm.).

On leaves of *Pinus halepensis*. France.

Valsa Burchelli. *Che.*

Pustulis tectis, erumpentibus; peritheciis atris (6-10), superne attenuatis, convergentibus, nigro-limitatis. Ascis clavatis. Sporidiis fusiformibus, hyalinis, 5-7 septatis, hinc illic cellulis divisus, ($\cdot 045 \times \cdot 01\text{--}\cdot 012$ mm.). Microstylosporibus linearibus, curvulis ($\cdot 01$ mm. long).

On branches. Brazil. (Burchell, No. 2390.)

Sphæria (Cortocolæ) Peruviana. *Che.*

Sparsa, tecta. Peritheciis atris, subdepressis, minimis. Ascis pyriformibus. Sporidiis congestis, inordinatis, hyalinis, ellipticis, triseptatis ($\cdot 015 \times \cdot 006$ mm.).

On twigs of grape vine. Peru.

ON SPHÆRIA QUERCUM. SCHWZ.

Mr. J. B. Ellis has recently published a note in the "Proceedings of the Academy of Natural Sciences of Philadelphia," in which he claims to have established the fact that all the following species are forms of the same fungus, *i.e.* :—

Sphæria quercum. Schwz.

Sphæria mutila. Rav. F. Car. iii. 62.

Sphæria ambigua. Schwz.

Sphærie Meliæ. Schwz.

Sphæria entaxia. C. & E.

Sphæria eriostega. C. & E.

Sphæria viscosa. C. & E.

Sphæria erratica. C. & E.

Sphæria thyoidea. C. & E.

Sphæria pyriospora. Ellis.

Botryosphæria pustulata. Sacc.

Dothidea venenata. C. & E.

Dothidea cerasi. C. & E.

Thumenia Wisteriæ. Rehm.

Sphæria Hibisci. Schw.

Sphæria Persimmons. Schw.

Sphæria Cratægi. Schw.

Valsa mahaleb. C. & E.

Melogramma Aceris. C. & E.

Sphæria fuliginosa. M. & N.

And having reduced all these to the rank of synonyms, he proposes to adopt the name of *Melogramma fuliginosum*, Ellis, to represent the *olla podrida*.

The process by which this curious consummation has been arrived at will be historically interesting, when even *Melogramma fuliginosum* is forgotten. It seems that all *external* features are discarded as unreliable, and all variations of internal structure ignored. The residue constitutes the diagnosis. It is assumed, however, that as the external is so exceedingly variable, as undoubtedly it would be in the above-named twenty species, the sporidia are to be the crucial test, and these being large and elliptical, will be the only real specific character in the new *Melogramma fuliginosum*. It matters not that they vary in size and form, that in some they should be obtuse, in others rather acute at the extremities, in some hyaline, in others deep brown. We are asked to accept this in all faith, and believe, in opposition to our prejudiced vision, that *Melogramma fuliginosum* is the type of a new process of species manufacture, by means of which any twenty or more so-called species may be rolled into one, provided the sporidia are nearly of the same size (colour not provided for in the patent). It would serve no useful purpose to enter upon a minute analysis of the synonyms quoted above, in order to refute a hasty note of this kind. There was probably some ground for believing that *all* the twenty species which are condemned were not equally sound, but that is no excuse for rushing to an extreme and condemning *all* to oblivion. Besides, upon what grounds were twenty other species excluded which have similar sporidia? surely they must have been known to the author. We can only regret that Mr. Ellis was so inpolitic as to commit his conclusions to print. That an aspirant for scientific honour should have done so was simply an act of premeditated suicide.

SPGAZZINI'S DECADES MYCOLOGIÆ ITALICÆ.

The original proposal of Sig. Spegazzini was to supply a limited number of small sets of dried specimens of Italian Fungi, as were new or rare, and which were not found in sufficient quantity for more pretentious exsiccati. For these select and valuable specimens a high price was demanded, but as the specimens were promised to be of a peculiar kind, few and good, this was a question of little moment. Six decades have now been issued, and we must confess them to be a lamentable satire upon the prospectus. The last three decades contain such rare species as *Puccinia anemones* P., *Trametes rubescens* Fr., *Uromyces Scrophulariæ* Lasch, *Æcidium Violæ*, Sch., *Peronospora densa* D. By., *Cystopus cubicus*, Str., *Sphærotheca Castagnei*, Lev., *Leptosphæria acuta*, M. and N., *Hysterium angustatum*, A. & S., *Acrospermum graminum*, Lib., *Lophodermium pinastri*, Chev., *Heterosphæria patella*, Tode, *Sordaria coprophila* Not. The remaining of the thirty numbers contain eight

new or rare species, such as should have constituted the entire thirty. It is a very unthankful office to remind persons of their promises, and to claim their fulfilment, but the vendors of scientific specimens are assumed to be gentlemen of education, superior to the advertising subterfuges of a petty tradesman, or the questionable morality of an ordinary draper's assistant.

ANNUAL CRYPTOGAMIC MEETINGS.

The Fungus Foray of the Woolhope Club is fixed to take place at Hereford, on Thursday, the 2nd October, and the gathering of Mycologists will, as usual, commence on the previous Monday.

The Cryptogamic Society of Scotland is advertised to meet during the previous week at Forres, commencing on the 26th September. There is to be no "show" this year, but excursions will be organised to scour the neighbourhood for Fungi.

By the way, we believe that we may state that the long promised *Mycologia Scotica* is gone to press, and that there is every prospect of its appearance this autumn.

As to the Botanical Society of France, we have not, up to the present, received any intimation of a Mycological Session being held this year. Our French friends are by no means so persistent in their Annual Meeting as the English and Scotch Mycologists. This is to be regretted, for undoubtedly such gatherings have a stimulating influence, which can scarce be compensated in any other way.

NEW FUNGI OF THE JURA.

By DR. L. QUELET.

***Peziza (Cupulares) irina.* Q.**

Cœrulea, violascens, crateriformis (2-4 cm.), inferne in stipito brevi albo attenuata. Ascis cylindraceis. Sporidiis ellipticis, (0.15×0.06 mm.) asperatis. *Peziza violacea*, Quelet, Jura et Vosges, iii., p. 120.

Ad terram in foliis emortuis.

***Peziza (Dasyscypha) grandinea.* Q.**

Granuliformis (1 mm.), turbinata, costata, lanosa, nivea. Hymenio concavo albo. Sporidia bacillari (0.13 mm.) 5-guttulata. In cortice *Populi*. Jura.

***Peziza (Mollisia) cœrulans.* Q.**

Molli, expanso-applanata, cinerea. Hymenio griseo-cœruleo, margine albo. Sporidia aciculari (0.1 mm.) incurvata.

Confluens in *Eupatorio cannabinio*.

N.B.—Apparently scarcely distinct from *Peziza cinerea*, except in its habitat. But I am strongly of opinion that the true *Peziza cinerea* is confined to wood, and bark, and never occurs on herbaceous stems.—M. C. C.

***Peziza (Mollisia) Rozei.* Q.**

Punctiformi (·03 mm.), gibbosa, lobulata, granulosa, glabra, molli, ex aurantio-incarnata roseola. Sporidia ellipsoidea (·005 mm. long), deinde fusiformi et guttulata.

In caulibus emortuis, *Hellebori fetidi*.

***Peziza (Mollisia) succinea.* Q.**

Punctiformis, sessilis, succinea (·05-·007 mm.), glabra, subdiaphana, cupulæformis. Ascis subclavatis. Sporidiis linearibus, minimis.

In lignis cariosis.

***Peziza (Hymenoscypha) equisetina.* Q.**

Cupula plana (·05-·8 mm.), tenui, tenera, glabra, luteo-alba, stipite brevi (·05 mm.), tenui lutescente, concolore. Hymenio luteo, nitidulo. Sporidia bacillari (·005-·6 mm.).

In *Equiseto limoso*.

***Peziza (Hymenoscypha) tenuissima.* Q.**

Pusilla, stipitata, albida (0·1-0·5 mm.); stipite tenuissimo, glabro. Margine tenuiter hyalino-floccoso. Ascis cylindræcis. Sporidiis linearibus, ·005-·007 × ·001 mm. Paraphysibus fusiformibus, acutis.

In foliis, culmisque graminum.

***Epichlœ virescens.* Q.**

Peritheciis membranaceis, conico-pyriformibus (·1-·2 mm.), e citrino-virentibus olivaceis, in tomentulo concolore nidulantibus. Nucleo hyalino. Sporidia aciculari, capillari (·05 mm.), multi-septata. *Acrospermum stromaticum*, Cooke in litt.

Sicut mucedo in *Sphæria moriformi*.

N.B.—From an examination of specimen, I am still of opinion that this is an *Acrospermum*, and by no means an *Epichlœ*, if genera are verities, and not mere names.—M. C. C.

PREPARATIONS OF ALGÆ.

We have referred on a previous occasion to the excellent preparations of Fungi for the microscope, made by the Rev. J. E. Vize. We have now had the opportunity of inspecting a series of mountings of Algæ, which have been prepared by the same gentleman, and are of opinion that such preparations must prove of great service to those who are commencing the study of these groups; or to those who have no leisure for a special study, but still desire to acquire some knowledge of the structure of Fungi, Algæ, and other of the Cryptogamia. It is hardly to be expected that such a series

as that of Algæ should present in all its parts the same excellence or the same interest; and we doubt whether the larger Algæ are suitable for the purpose, whilst we miss many which would be sure to command attention. It may be an open question whether a good method of mounting Algæ has yet been devised. Somehow the cells will lose their plumpness, and their colour, even in certain cases becoming so transparent that the outline is lost. It has long been hoped that some method would be discovered of "mounting" Desmids so as to preserve the green colour unimpaired. If in his progress with the Algæ the Rev. J. E. Vize should be fortunate enough to issue a good typical series of fresh water algæ, we doubt not he will receive the encouragement he desires and deserves.

ONION SMUT (UROCYSTIS CEPULÆ).

Dr. Maxime Cornu has called attention to the appearance in France, and for the first time in Europe, of the American Onion Smut (*Urocystis cepulæ*, Farlow). The onions in the neighbourhood of Paris, principally the variety known as *l'Oignon de Nancy*, have been suffering from the attacks of this transatlantic pest, and, as Dr. Cornu points out, it is very probable that it will soon spread over Europe in the same manner as *Puccinia malvacearum* has done. When bringing the subject of this 'smut' under the notice of the Scientific Committee of the Royal Horticultural Society, some time since, we urged as an excuse that it was not at all improbable that it would make its appearance in Europe, and therefore it was well to be on the guard. The rapid and devastating spread of the Hollyhock disease, has proved how rapidly but surely these minute parasites travel. Let us hope that the *Peronospora* of the vine, which is akin to the potato disease, will not honour Europe with a visit, since the vine has already sufficient foes without any fresh importation. The onion smut is closely allied to one which attacks the meadow crocus (*Colchicum*), well known in Europe.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

NEW BRITISH HEPATICÆ.

By B. CARRINGTON, M.D.

The following species have been distributed in Carrington and Pearson's "Exsiccati":—

66. ***Riccia glaucescens*.** Carr.

Dioicous. Fronds flabellate-furcate, sometimes crowded and imbricating each other; segments linear-cuneate or battledore-shaped, concave, not canaliculate on the upper aspect, and surrounded by a rather broad border, recurved and convex when moist, but inflexed when dry.

Texture homogeneous, composed of large cells arranged in regular series, thickened along the mid-line of the lower surface, margins thinner, acute, fringed with small but strong translucent cilia which require a good lens for their recognition; sometimes these are wanting or irregularly disposed, and the border simply crenulate.

Apex of fronds emarginate, the lobes connivent, connected at the base by a lunate fold, between which there is often a small central tongue proceeding from the inferior lobe of the frond.

Colour, pale translucent glaucous green above, border somewhat paler, under surface covered laterally by a delicate membrane or detached scales of a purple colour, best seen when the plant is dry and the border incurved—mid-line brownish radiculose. Capsules few, occupying the hollow central channel near the base of the frond; spores large, dark brown, muriculate.

Riccia glaucescens, which was first shown to be ciliated by Mr. Pearson, from Barmouth specimens, is widely distributed throughout Britain. I have received it from various stations under the name *R. crystallina*, but that species, although resembling it in the large prominent surface cells, which reflect the light like those of the Ice Plant, is always destitute of cilia. *R. cavernosa* Hoff, which in like manner is often confounded with *R. crystallina*, may be recognised by the large air-cells beneath the surface layer, which become depressed and pitted when dry.

After a comparison with all the forms in my herbarium, the one it seems to approach most nearly is *R. Bischoffii*, Hübn., but in

that species the fronds are broader and shorter, generally bilobed, the lobes obovate to obcordate, channelled above, but thick and prominent beneath, surrounded with a broad membranous margin fringed with large obtuse cilia.

The fronds of *R. glaucescens* are about $\frac{3}{10}$ " to $\frac{7}{10}$ " in length by $\frac{1}{10}$ " to $\frac{1}{20}$ " in diameter, resembling the large form of *R. glauca* in size and colour, but in it the fronds are thinner, of the same colour on both surfaces, and the margin entire.

67. *Riccia tumida*. Ldg.

Fronds minute, crowded, thick and fleshy, oblong-pyriform, obtuse, remarkably narrowed at the base, margins tumid, covered with purple scales, and fringed with a double row of lanceolate cilia; capsules immersed, spores small, papillose.

From *R. ciliata* this is distinguished at once by the form of frond, purple scales, and double row of cilia.

In *R. ciliata* the segments are regularly furcate, more densely ciliated, linear-cuneiform, texture thinner, and both surfaces pale dirty green; whilst *R. glaucescens* may be known by the larger size, acute edges of the fronds, and less crowded ramification.

According to Lindberg; this is the *Riccia minima glauca, segmentis angustioribus, ad margines pilosissimis*, Nov. Gen. Pl. p. 107, n. 3, t. 57, f. 6.

First collected in Britain by Wm. Joshua, Esq., near Monmouth, May, 1877.—*B.C.*

76. *Gymnomitrium crassifolium*. Carr.

Tufts pulvinate, stoloniferous, nearly black when dry; shoots radiculose on the under surface, erecto-decumbent, irregularly innovant, ramuli ascending, sub-terete, the fertile ones clavate; exstipulate; leaves imbricated, erecto-secund, about twice the breadth of the stem, obliquely clasping, orbiculate, acutely emarginate, concave, segments short inflexed, sinus angular, of thick texture, scarcely altered when dry, minutely papillose, areolation dotted, sub-opaque, margin entire (not scariose); outer involucreal leaves much larger, free, cleft for half their length into two obtusely-pointed lobes; inner involucreal leaves shorter, connate, lacinate-dentate; capsule spherical, pedicel short.

Hab. First collected at Craig Cognach (?) near Ben Lawers, in 1848, by A. O. Black.

The Ptarmigan, Perthshire, August, 1878, fertile, *C. J. Wild.*

Note.—*G. crassifolium* formed part of a collection of Hepaticæ, made about 1848, in the neighbourhood of Ben Lawers, by Dr. A. O. Black, and which came into the possession of Dr. M. C. Cooke.

Mr. Wild, who was fortunate enough last summer to stumble on it—literally, since it was after a fall producing severe injury to the knee, and making frequent rests necessary, that this gentleman collected the species—described it as growing “in broad black patches on damp soil, with the habit of *Anthelia julacea*.” For a long time I mistook it for a form of *Nardia Funckii*, although noticing the more creeping habit, longer rootlets, and duller

closely imbricated second leaves. Now that fructification has been found (only two capsules were met with), there can be no doubt as to its generic position. From *Gymnomitrium concinnatum* and *G. coralloides* it may be distinguished at a glance by the smaller size and absence of the creamy glaucous colour and the scariose margins of the leaves of those species. In our other species, *G. crenulatum*, which approaches it more nearly in size and colour, the shoots are more regularly terete, and have a wiry look and copery lustre, while the border of the leaf is scariose and crenulate-dentate.

85. *Jungermannia Nevicensis*. Carr.

Tufts cushion-like, pale green. Exstipulate; shoots $\frac{1}{2}$ to $\frac{3}{4}$ of an inch long, and not thicker than human hair, creeping and entangled at the base, flagelliferous, stem ascending, simple or irregularly branched, flexuous, apex curved, lower portion leafless, and, like the stolons, devoid of rootlets; leaves bifarious, alternate, scarcely broader than the stem, remarkably distant, vaginate, upper ones erect, roundish-ovate, lower erecto-patent ovate-subquadrate, complicate-concave, rounded at the base, apex boat-shaped, bidentate, lobes short acute, incurved, sinus acute (about one-fourth the length of the leaf), texture thin, the cells large, translucent—fructification?

Hab. Discovered on moist shelving rocks, near the last spring below the summit of Ben Nevis, July, 1875, by Mr. J. Whitehead, of Dukinfield.

Note.—Although conscious how objectionable it is to name species from barren specimens, the curious plant, which, through the liberality of the discoverer, I am glad to introduce to British botanists, differs so much from anything known to me, that I have ventured to call their attention to it, in the hope that fructification may be looked for, and its position determined.

The tufts resemble in size attenuate forms of *Jung. catenulata*, but the vertically patent conduplicate distant leaves, and the absence of rootlets on the creeping stolons, distinguish it from that and other allied forms.

In the creeping flagelliferous habit and position of the leaves it reminds us of *Nardia* (*N. Funckii*), but here again the distant leaves (nearly half a millimetre apart), the lax areolation devoid of trigones, and the weak succulent stems, the cortical layer composed of large quadrate cells, separate it from all known species.

The colour is lustreless yellowish-green, stolons, and sometimes the foliage, tinged with brown.

96. *Diplophyllum myriocarpum*. Carr.

Exstipulate, creeping at the base, rhizomatous shoots entangled, flexuose, polished, resembling pale-brown horse hair; stems terete ascending rigid, interrupted repeatedly, innovant, ramuli springing from one or both sides of the old axis, either barren and setaceous, or fertile, and with rapidly accrescent leaves. Leaves on the lower portion of the shoots and flagella distichous, approximate, erect and

appressed to the stem so closely as to be readily overlooked, ovate, carinate-concave, cleft for half their length into two lanceolate lobes, sinus acute, texture thin, chitinous, polished punctate-areolate, cells subquadrate, colour golden-brown. Involucral leaves much larger, vertically patent lobes shallower and more obtuse, half hiding the colesule. Colesule at first turbinate, when mature roundish-ovate, ventricose, obtusely-trigonus below, mouth contracted, 5·6 plicate, denticulate.

Hab. Creeping among the spongy peat-like soil in moist crevices of the rocks in the stream from Ben Venue running in the direction of the Trossachs Hotel. Growing in company with *Jung. laxifolia*, July, 1876.

If there is anything unsatisfactory about the individuality of *J. Nevicensis*, there can be none respecting the present species, which is one of the most interesting and distinct accessions recently made to our flora. In size it resembles *J. divaricata*, but its true alliance is with *Jung. minuta*, of which it might be accounted a microscopic form.

Owing to the rigid chitinous texture of *J. myriocarpa*, the stems, and even colesules, decay very slowly, so that it is not uncommon to find five or six colesules one above another, representing the growths of so many seasons. This gives the plant a very characteristic appearance when it is remembered that the shoots are rarely more than from five to seven millimetres in length.

The same proliferous habit is not uncommon in *Jung. minuta*. It is curious, too, that in both species the fructification is abortive and the *pistillidia* barren and undeveloped, probably from the absence of the male plant.

114. **Cephalozia multiflora.** (Huds.) Lindb.

In deference to the opinion of my friend, Mr. Slater, and I am given to understand of our greatest hepaticologist, Dr. Spruce, I insert this species under the above name. Whether it is the *J. multiflora* of Hudson I am unable to say, but the description in Withering and other old writers pertains to *J. setacea*.

The original figure of Dillenius, T. 69, f. 4, represents, it appears to me, a var. of *bicuspidata*, nor can I detect any reliable distinction between the one and the other. Any one who will examine a large series of *J. bicuspidata* will be astonished at the variability in the form of the leaf and colesule, but the cell structure is remarkably uniform, and if once understood it would be impossible to confound it with true *J. connirens*.

In a note under *J. setacea*, **Brit. Jungerm**, T. viii., Sir W. Hooker remarks:—

“The specific name of *multiflora* was, in all probability, imposed upon this plant by Hudson, in consequence of the numerous footstalks represented in the Dillenian figure here quoted (T. 69, f. 4, A.B.), and has, in point of priority, a right to be retained; but, as not only that engraving (although cited by Hudson and Linneus), but also the original drawing in Sir Joseph Banks’

library, are extremely unlike our present plant, and especially as this species, in consequence of the paucity of its flowers, has been thought, by another eminent botanist, deserving of a name directly the reverse in its meaning, that of *J. pauciflora*, I have considered it best to do away with an appellation which can only tend to mislead, and to substitute in its room the very appropriate one of Weber. It is, indeed, merely in compliance with the opinion of preceding botanists, and contrary to my own, that I here refer to the Dillenian figure, which appears most like a very common appearance of *J. bicuspidata*, and was considered by Weber so doubtful that he quotes it under *J. setacea* with a mark of uncertainty. I was in hopes of ascertaining the fact by examining the specimen corresponding with the number in the Dillenian herbarium, but, to my great disappointment, what is there preserved is an injured morsel of *J. connivens*, Dicks, a plant to which neither the figure nor description bears the smallest resemblance! —
B.C.

ON THE IMPORTANCE THAT SHOULD BE ATTACHED TO THE DEHISCENCE OF ASCI IN THE CLASSIFICATION OF THE DISCOMYCETES.

By MONSIEUR E. BOUDIER.*

The discovery of the mode of dehiscence of the Asci in the Discomycetes is of recent date. Leveillé in the article *Peziza* in the Dictionnaire d'Histoire Naturelle de D'Orbigny, confessed he had never seen it, and it is to M. M. Cronan that we owe the first observations on the subject. These gentlemen saw clearly the operculum in the *Ascoboli*, and in some neighbouring species, but said they had never met with it in other *Pezizæ*. They also made it the special character of *Ascobolus*, and joined some species of the neighbouring genera amongst which they had observed it. More recently, in their "Florule du Finistère," in 1867, they imperfectly saw another mode of dehiscence in *Lecanidium atrum* (= *Patellaria atrata* Fr.), but they described it badly, for the sporidia, in all the *Pezizæ*, are discharged at the same time. The observations of these scientific men rested here, and they did not attach sufficient importance to their discovery.

Since this period, in 1869, in my "Mémoire sur les *Ascobolés*," I have pointed out the fact that this group was not the only one in which the asci may be provided with an operculum, and that this mode of dehiscence was to be met with in *Pezizæ* of the sections

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Humaria, *Sarcoscypha*, *Aleuria*, and likewise in *Verpa*, *Helvella*, and *Morchella*, while *Helotium* and the neighbouring genera *Leotia*, *Mitrula*, and *Geoglossum* presented a different mode of dehiscence.

At this time, after the examination of a considerable number of Discomycetes, I am able to call the attention of mycologists to the necessity of separating this family into two very natural sections, according as to whether the mode of dehiscence is with, or without an operculum. I would call the first section by the name of *Operculate Discomycetes*, or simply *Operculæ*, because in this section the opening of the asci takes place by the elevation of a little lid at its summit. The second I would call *Inoperculate Discomycetes*, or simply *Inoperculæ*, because the exit of the sporidia takes place by a small hole, formed at the extreme summit of the asci, with its margin more or less elevated, but without any appearance of an operculum.

There is no great difficulty in observing this dehiscence, although few authors mention it. A very little attention soon renders it quite familiar, and I consider its careful observation indispensable to a good classification of genera and species.

In the first division, the *Operculæ*, the dehiscence is accomplished by the formation of a circular slit at the summit of the ascus. The tension produced when at maturity by the increase of their growth causes them to rupture circularly at the summit, following the slit which is formed there, as I have previously pointed out in certain *Ascoboli* ("Mém. sur les Ascobolés," p. 11, pl. 10, fig. xxxi and 8 and 9), throwing the operculum back by the sudden projection of the contents of the ascus leaving it generally a little elevated, with one space open or sometimes almost closed. This operculum varies according to the form of the extremity of the ascus. It is convex, when it is round, as in certain *Humaria* and *Ryparobius*; it is flattened, when the ascus is truncate, as in *Aleuria*; it is mammular in the centre, when the extremity presents a similar character to *Ascobolus*.

When the ascus is larger, it often bends on each side, which causes it to appear oval or triangular, as often occurs in *Saccobolus*. In almost all cases it retains its round form very clearly when seen in front, and slightly raised when seen in profile. The circular slip is almost always horizontal, but in a few rare instances it is oblique, as in some species of *Humaria*. In one particular genus, so well named by Mr. Renny, *Ascozonus*, it is perpendicular, and this form caused me to doubt for a long time as to the true place this genus ought to occupy. If it be considered as a slit, it will come in the *Operculæ*, and I am now of this opinion, in consequence of the great affinity existing between this genus and *Ryparobius*. If it be considered as a simple rent of the apex of the ascus, which would not be capable of softening, it will enter into the second section, as I had at first thought. But I repeat such cases form very rare exceptions to the general rule.

The group of Discomycetes, dehiscing by an operculum, presents some characters which give an appearance of close relationship to all the species belonging to it. Thus the sporidia of all those with which I am acquainted are simple; that is to say, they are without septa, sphaerical, or more frequently, oval, or elliptical in shape, with their extremities rounded, rarely acuminate. They are often warty and sometimes are reticulated. The consistence of the cups is almost always waxy, less elastic than in the second division, except in some rare exceptions. The hairs which are sometimes found on the exterior are generally of a different structure. The greater number of the species are found on the earth, on dung, the soil of old trees, or rarely they are met with on sound dead wood or on the bark. This first division includes the Morels, the Helvellas, the Verpas, the Pezizæ of the sections, *Aleuria*, *Humaria*, many of the *Lachnæ*, *Ascobolus* and the greater part of the genera which are derived from this section.

The second division, the *Inoperculæ*, is clearly separated from the first. There is no longer a transverse or oblique slit at the extremity of the ascus; the extremity itself becomes softened in the centre at the moment of maturity, and the tension which is then produced ruptures it, permitting the escape of the sporidia with the liquid in which they exist. By the fact of this emission, the margin of the opening becomes more or less turned like a collar, either entire or slightly toothed, remaining often very visible, as in *P. tuberosa*, *P. rapulum*, and *P. echinophila*; but sometimes also closing together, so that in order to distinguish the opening, it is necessary to prove its existence by squeezing the thin walls of the ascus together, as in the small *Mollisia*, *Mitrula*, &c. Most frequently, the extremity of the ascus presents a broad truncated nipper, very thin in the centre.

The species of this section frequently have sporidia with a tendency to division, or they are clearly divided; and very often they are simple, but become divided at the time of germination. I know of none that are verrucose or areolate; they are rarely sphaerical, but most frequently fusiform, more or less elongated, and sometimes club-shaped; many are more or less curved, and in general they are much smaller than those of the species in the first section. The consistence of the cup is more firm and elastic, and much less waxy; the hairs when they exist have a different appearance. The species are rarely terrestrial, being much oftener found on dead wood, dead leaves and stems, and sometimes even on the living branches. This second division includes *Geoglossum*, *Mitrula*, *Leotia*, *Phialea*, *Helotium*, *Lachnella*, *Mollisia*, and all the genera belonging to them.

There exists a little group of ascigerous fungi in which the mode of dehiscence is not yet well known: I allude to the true Tuberaceæ, *Tuber*, *Elaphomyces*, and others, that is in fungi completely closed, in which the asci are altogether internal and cannot discharge their sporidia externally. I think that in

this group the asci do not open, but disappear insensibly by absorption, and thus leave their sporidia free. This group, altogether natural and distinct, certainly belongs to the Ascomycetes, but should not be placed in the Discomycetes, from which they differ notably. I may say the same of the Pyrenomycetes in which the greater part of the species probably have dehiscent asci, but this family, in which the processes are most difficult to observe, does not come within the limits to which I confine myself.

It will be seen from what I have said, how much importance I attach to the mode of dehiscence, and it is with the view of inducing mycologists to observe it more carefully that I have dwelt upon it. There is no great difficulty in observing it, a magnifying power of 300 diameters is sufficient, but it is necessary to search for it at the upper extremity of the open asci. These asci are always to be recognised by the absence of protoplasm, by which they differ from the young plants which have not yet formed their sporidia. Moreover, the tincture of iodine may be employed, which colours the membrane and renders the operculum more visible. This tincture should, indeed, always be employed in the examination of species, because it often gives a deep blue colour at the extremity of the ascus, as in *Aleuria* proper, *P. cochleata*, *P. badia*, *P. vesiculosa*, and others, and the character has a certain value; in other cases the colour is fainter, as in *P. firma*, *P. echinophila*, &c.; in other cases again, only the extreme margin of the opening is tinted, as in *Mitrula*, or it appears as a blue point, while more frequently the iodine does not produce any other colouration than a yellowish tint to be produced.

I believe these observations are of great use in the natural classification of the numerous species of this difficult family, upon which the efforts of the most able mycologists have been more and more engaged of late. I believe, too, it may prevent other less happy arrangements. I will mention for example *Peziza tuberosa* and *P. rapulum*, which have their asci inoperculate, placed by Persoon and by Fries, and even by modern authors, amongst the *Aleuria*, in which these organs are operculate. Nevertheless these species have something in their aspect nearly approaching *Phialea*, as Persoon in his Synopsis (p. 644) had already remarked "*de intuitu*" of *P. tuberosa*.

The *Lachnea*, *Humaria*, and other genera beside with operculate asci, contain many species which ought to be withdrawn and placed in the second division.

It is only by examining the species in a fresh state that any perfection can be attained in a study so difficult as the classification of *Pezizæ*. In the dry state these observations are very difficult and often impossible, in consequence of the contracted condition in which the asci are found.

These two sections in the *Discomycetes* form two parallel series agreeing well in the base. Thus the *Operculæ* commence with the

species of a more elevated order, as *Morchella*, *Verpa*, *Helvella*, passing by the *Peziza* in the sections *Aleuria*, *Lachnea*; descending by *Humaria*, *Ascobolus* to *Ryparobius* and *Ascozonus*; ascending again in the *Inoperculæ* by the small genera of *Mollisia*, *Lachnella*, *Phialea*, as far as *Leotia*, *Mitrula*, and *Geoglossum*; that is to say almost to the height of the highest species of the first section, only changing very slightly, as I have shewn, the classification now generally adopted.

FUNGI EGYPTIACI.

Collecti per DR. GEORG SCHWEINFURTH.—*Determinati per*
F. DE THUEMEN.

SER. II.

(*Ser. I. vide "Grevillea VI., p. 102-104."*)

19. **Phytophthora infestans.** *DeBy.* *Peronospora infestans.* DeBy.
Ad folia viva *Solani esculenti* Dun. Medinet in Fajum, 1,
77 (Specimina valde corrupta!)

20. **Gloeosporium Schweinfurthianum.** *Thuem.* Nov. spec.

G. acervulis epiphyllis, subgregariis, sine macula, mediis, plano-verrucæformibus sublenticularibusve, dilute olivaceis, vix emersis; sporis longe ellipsoideis, simplicibus, utrinque subobtusatis, homogenis, achrois, 16-18 mm. long, 7-8 mm. crass.

In *Erodii glaucophylli* L'Herit. foliis vivis et languidis in deserto ad Wadi-Dugla pr. Cairo, 5, 79.

21. **Oidium erysiphoides.** *Fr.*

In *Trigonellæ stellatæ* Forsk. foliis vivis in deserto pr. Wadi-Ashar, 3, 77.

22. **Oidium erysiphoides.** *Fr.*

In *Fænugræci officinalis* Moench. foliis vivis pr. Adulh in Fajum, 3, 79.

23. **Oidium erysiphoides.** *Fr.*

Ad folia viva *Lini usitatissimi* Linn. Pr. Senura in Fajum, 3, 79.

24. **Oidium erysiphoides.** *Fr.*

In foliis vivis *Viciæ calcaratæ* DeC. Pr. Senura in Fajum, 4, 79.

25. **Oidium medicagineum.** *Thuem.* Nov. spec.

O. cæspitibus late effusis, epi-raro etiam hypophyllis, pulveraceis, dilute ochro-albidis; hyphis brevibus e mycelio repente erectis, simplicibus, continuis, hyalinis; sporis numerosis, magnis, elliptico-parallelogrammis, utrinque obtusatis et minime angustatis medio subdilatisve, episporio lævi, subcrasso, hyalinis, 26-28 mm. long, 9-10 mm. crass.

In *Medicaginis denticulatæ* Willd. foliis vivis pr. Serssene in Fajum, 3, 79.

26. **Ustilago Penniseti.** *Koernik.* in "Hedwigia," 1877, p. 35.
Thuemen, "Mycotheca Universalis" No. 1318.

In ovariis *Penniseti dichotomi* Delile. Ad Wadi-Hof pr. Heluan pr. Cairo, 3, 77.

Obs. Sporæ magnitudinis diversissimæ, 5.5-10 mm. diam., valde irregulariter globosæ, sæpe subangulosæ, conglobatæ, non punctulatæ, episporio crassissimo, 1.8-2 mm. crasso.

27. **Ustilago carbo.** *Tul.*

f. *Tritici vulgaris.*

In ovariis vivis *Tritici vulgaris* Vill. In oasis Chargeh, 3, 74.
 Ab incolis interdum libatum.

28. **Ustilago carbo.** *Tul.*

f. *Cynodontis dactylonis.*

In *Cynodontis dactylonis* Lin. spicis pr. Chargeh, 2, 74.

29. **Ustilago Tulasnei.** *Kühn.* in "Rabh. Fungi Europæi," No. 1997.

In *Sorgho vulgaris* Pers. ovariis ad Rigga pr. Cairo, 12, 64.

30. **Ustilago Fschæmi.** *Fuck.*

Ad *Andropogonis* speciei indeterminatæ spicas vivas pr. Theuba-Ghattas in Djur, 9, 69.

31. **Sorosporium desertorum.** *Thuem.* Nov. spec.

S. ovaria replectens subturgensve, cum massam grumosam, aterrimam complectens, paleas infuscans; sporis irregulariter globosis vel rotundo-ovatis vel subcompressis globosis, episporio tenui, vix papilloso, punctulato, fuscis, 8-10.5 mm. diam., in glomerulis subglobosis vel irregularibus, 35-50 mm. diam., congregatis.

In ovariis vivis *Coelorrhachidis hirsutæ*, Brongt. (*Rottboellia hirsutæ* Vahl.), in Wadi-Gundeli pr. parietinas, "Dar-el-Beda," in deserto medio, 4, 79.

32. **Puccinia verruca.** *Thuem.* in "Revue Mycologique," I. p. 9.

Ad folia viva *Centaureæ napifoliæ* Lin. Com. Dr. Karl Keck.

33. **Uromyces Lupini.** *Sacc.* in "Nuovo Giornale Botanico Italiano," 1873, p. 274.

Ad *Lupini digitati*. Forsk. folia viva pr. Senura in Fajum, 4, 79.

Obs. A *Uromyceti Lupini* Berk. et Curt. in Proceed. Amer. Acad. of Arts, IV., p. 127, valde diversus.

34. **Uromyces Trigonellæ.** *Pass.*

In foliis vivis *Foenugræci officinalis*. Moench. pr. Aksieh in Fajum, 4, 79.

35. **Uredo Frankeniæ.** *Mntg.* in Barker Webb. "Hist. Canar.," V., p. 90.

Ad *Frankeniæ pulverulentæ* Lin. folia viva pr. Serssena in Fajum, 3, 79.

36. **Uredo Isiacæ.** *Thuem.* Nov. spec.

U. in foliis vaginisque acervulos maximos, latissime effusos, usque ad 6 centim. longos, et 1.5 centim. latos formans; acervulis ferrugineis, pulveraceis, primo tectis, demum liberis, inquinantibus; sporis ellipsoideis, utrinque æqui-rotundatis, episporio lævi, crassissimo, ciliatè fasciculatis, 22-26 mm. long., 16-20 mm. crasso, episporio 5-6 mm. crasso.

In foliis vaginisque vivis *Arundinis Isiacæ* Delile. Ad Heluan pr. Cairo in piscina aquæ sulfureæ, 6, 77.

37. **Melampsora Euphorbiæ.** *Cast.*f. *Euphorbiæ Peplidis.*Ad *Euphorbiæ Peplidis* Lin. folia et caules vivos pr. Aduch in Fajum, 3, 79.38. **Melampsora Euphorbiæ.** *Cast.*f. *Euphorbiæ prunifoliæ.**Fungus stylosporiferus* = *Uredo Euphorbiæ* Pers.In foliis vivis *Euphorbiæ prunifoliæ.* Facq. Ad Ballas pr. Kaliub., 2, 79.39. **Melampsora Lini.** *Tul.*f. *Lini usitatissimi.**Fungus teleutosporiferus.*Ad caules languidos *Lini usitatissimi* Lin. Ad Medinet in Fajum, 1, 77.40. **Sphæropsis Calotropidis.** *Thuem.* Nov. spec.

Sph. maculas magnas, epiphyllas, asteromoides, plus minusve orbiculatas, late effusas et sæpe confluentes, griseo-olivaceas, fere subpulveraceas formans; peritheciis densissimæ gregariis, numerosis, minutis, punctiformi-conicis, atris; sporis cylindrico-ellipsoideis, vertice acutatis, basi angustato-obtusatis, simplicibus, 20-30 mm. long, 6 mm. crass., pallidissime cinerascens in sterigmatibus sublongis, tenuibus, rectis vel subarcuatis, 10-18 mm. long.

Ad folia languida *Calotropidis procæræ* R. Br. pr. Berber in Nubia, 1866.41. **Cicinnobolus Cesatii.** *DeBy.*In *Violæ calcaratæ* Desf. (In *Oidio erysiphoidæ* Fr. parasitans) foliis vivis pr. Senures in Fajum, 4, 79.42. **Cicinnobolus Cesatii.** *DeBy.*Ad folia viva *Lini usitatissimi.* Lin. (In *Oidio erysiphoidæ* Fr. parasitans), pr. Senures in Fajum, 3, 79.

A NEW GENUS OF DISCOMYCETES.*

By M. C. COOKE.

The Discomycetes are a large group of fungi, which form a portion of the order of Ascomycetes. The substance of which the fungus is composed is of a fleshy or waxy nature, very similar to the soft flesh of many of the Agarics, and never hard, corky, or brittle, as in most of the Sphæriacei. It is true that some genera of the Sphæriaceous group, such as *Cordyceps* and *Hypocrea*, have a similar fleshy substance, or stroma, but in these we recognise another point of difference, in the asci being enclosed within definite perithecia, which are embedded in the stroma, whereas in the Discomycetes there are no perithecia, the hymenium being always continuous over the fructifying surface. The form of the

* A paper read at the annual meeting of the Woolhope Club, at Hereford, October 2.

Discomycetes is doubtless variable, but this follows two types, the one pileate, the other cupulate, the one club-shaped, the other cup-shaped, with their various modifications. In the latter the hymenium lines the concavity of the cup, in the former it is spread over the outer upper surface, being deficient in the stem. There is no exception to this general rule, so that it is never difficult to indicate the position and limits of the hymenium. They are, therefore, fleshy ascomycetous fungi, with the hymenium, or fructifying surface confined to a definite area, but never enclosed in perithecia.

As in all other branches of natural history we encounter aberrant forms, which possess great interest because they depart from the general type, so here, amongst the Discomycetes, I have to describe an aberrant form, which possesses a general interest to the mycologist as a new arrangement or inversion of parts or organs.

In 1874 and 1875, Dr. Berggren, of Lund, visited and collected in New Zealand, and amongst others he obtained a large and interesting collection of fungi, and made about one hundred rough water-colour sketches. These fungi have passed into my hands for determination, and among them the subject of this communication, together with two "sketches from the life."

The fungus, which I purpose calling BERGGRENIA, is ovate, pyriform, somewhat clavate, about one inch in height, and nearly as much in width, but compressed laterally to one-fourth of that thickness in one direction. It is described as looking very much like a *Tremella*, being a little plicate or ribbed below and inflated, so that the centre is hollow, and though attenuated a little at the base there is no distinct stem. The base is watery white, the upper half a bright reddish orange.

For some time I was puzzled with this, which at first I regarded as a *Tremella*, or *Guepinia*, or it might be an ally of *Spathularia*; softened and examined under the microscope I could find no external trace of hymenium, nothing but a tough cellular tissue of large and uniform cells, until at length, almost in despair, I cut open one of the specimens, and found the inner walls softer, rugose, and so different in texture that at once, more out of curiosity as to the character of the cells, than hope to find the hymenium, I examined a portion of the inner wall, and found it to consist entirely of an effused hymenium of large, closely-packed, cylindrical asci, each containing its eight elliptical sporidia, but without paraphyses. In fact here is an inflated fleshy sac, with the hymenium enclosed and covering the whole of the inner surface. It is a *Spathularia* turned inside out, and is of far more importance to us than a mere new species or a new genus could be, presenting to those who are acquainted with the structure of the Discomycetes a most interesting subject for study and reflection, adding yet another to the contrarieties of the antipodes.

It may not be out of place to allude to the affinities which this

new fungus seems to present. There is no doubt whatever that the hymenium is entirely enclosed, although both figures and specimens exhibit ruptured individuals in which the hymenium is laid bare; but if we consider that in a perfectly closed specimen the hymenium was fully matured, there is no reason to conclude that a wholly enclosed hymenium is not its normal condition. Perhaps *Sphaerosoma* comes nearest to *Berggrenia*, except that it has a thicker and firmer periderm, and is moreover hypogæous. This affinity is sufficient to prove that it is not impossible for a plant of such a structure to be a Discomycete, and Tulasne considered *Sphaerosoma* to be a Discomycete although evidently so very closely related to *Genea*. Indeed, in my opinion *Sphaerosoma* is further removed from the Discomycetes in the direction of the Tuberacei than *Berggrenia* from some species of *Peziza*.

There is a great similarity in the character of the fruit, and in the fleshy stroma, as to texture, &c., between *Cyttaria* and *Berggrenia*; in fact, the latter resembles the former, inverted, and the areolæ suppressed. The hymenium is confined in some *Cyttariæ* to a few nearly closed cells, and although the relationship is by no means close in any direction, I am inclined to place *Berggrenia* in the *Bulgariacei*, nearest perhaps to *Cyttaria*. The discovery hereafter of intermediate links may render the affinities clearer than at present they seem to be; under any circumstances the new genus has a higher interest than its mere position in any system of classification.—From the "*Gardeners' Chronicle*," Oct. 25, 1879, p. 533.

AGARIC WITH GREEN SPORES.

We have lately received from Mr. Morgan, of Ohio, U.S., a dried specimen of an Agaric, with all the external features of a large *Lepiota*, with a pileus nine inches in diameter, which has spores when first thrown down of a bright green colour, but upon drying these become of a duller verdegriis green. This fungus has been named *Agaricus Morgani*, Peck, and is interesting as being unique in the colour of the spores. It is not an accidental circumstance which has affected a single specimen, but one which is characteristic of the species. The individual spores, in the dried state, exhibit no colour when the light is thrown through them on the stage of the microscope. Probably this may not be the case with fresh spores. At any rate, the circumstance is worthy of being recorded.

NEW ZEALAND FUNGI.

By M. C. COOKE.

The following is an enumeration of a portion of the Fungi collected in New Zealand by Dr. S. Berggren, of Lund, during 1874 and 1875, with a few species collected at the same time on the "Dividing range" in the north of Melbourne, Australia. The collection also includes some Fungi from the province of Wellington, obtained by W. T. L. Travers, Esq., F.L.S., which were placed at Dr. Berggren's disposal. The residue of the collection, chiefly Hymenomycetes, will be enumerated hereafter.

Agaricus (Armillaria) melleus. *Vahl. Fr.; Epic., p. 23.*

On trunks. Maungaroa (144).

Agaricus (Naucoria) semiorbicularis. *Bull. Champ., t. 422.*

On dung. Waitaki (61).

Hygrophorus miniatus. *Fr. Epic., 330.*

On the ground. Maungaroa (154).

Hygrophorus cyaneus. *Berk. in Hdbk., N.Z. Flora, p. 604.*

On the ground. Waitaki (85), with figure.

The colour as shown in the drawing is verdigris green, but in other respects it does not appear to differ from the typical form in any essential particular.

Cantharellus umbriceps. *Cooke sp. nov.*

Pileo carnosus, molli, e convexo depresso, glabro, umbrino; margine incurvo; stipite solido, pallido, sursum attenuato; lamellis subconfertis, dichotomis, aurantiacis.

On the ground. Maungaroa (138).

Pileus about an inch broad; stem two inches long, half an inch thick at the base, attenuated upwards; flesh tinged with orange; spores small, subglobose.

Schizophyllum commune. *Fr. Epic., 403.*

On trunks. Otawa, Bay of Islands, Ohaeawai, Maungaroa, Banks' Peninsula, Little River, Wellington (Travers), Melbourne (Australia).

Polyporus (Mesopus) arcularius. *Fr. Hym. Eur., p. 526.*

On the ground. Waima, Bay of Islands, Ohaeawai.

Polyporus (Mesopus) oblectans. *Berk. in Hook. Journ., 1845, p. 51.*

On the ground. Melbourne (Australia, 364), Lake Taupo (317).

Polyporus (Pleuropus) rhipidius. *Berk. in Hook. Journ., 1847, 319.*
var. *curtipes.*

On bark, &c. Melbourne (Australia, 380, 374), River Bealey (348), Bay of Islands (236).

Polyporus (Pleuropus) melanopus. *Fr. Hym. Eur., 534.*

Melbourne (Australia).

Polyporus (Anodermei) hemitrepheus. *B. Fl. N. Zeal.*

Resupinate form.

On trunks. Coromandel (392).

Polyporus (Anodermei) cinnabarinus. *Fr. Hym. Eur.*, 533.

On trunks. Coromandel, Waitaki, Maungaroa, Bay of Islands, Banks' Peninsula, Westland, Wellington (Mr. Travers), Melbourne (Australia, 382).

Polyporus (Anodermei) dichrous. *Fr. Hym. Eur.*, 550.

On trunks. Wellington (Travers), Coromandel, Ohaeawai, Waitaki (256), Winton (226, 350), Dunedin.

Polyporus (Placodermei) applanatus. *Fr. Hym. Eur.*, 557.

On trees. Hokiangra, Melbourne (Australia).

Polyporus (Placodermei) australis. *Fr. Hym. Eur.*, 556.

On trunks. Maungaroa.

Polyporus (Placodermei) pectinatus. *Klot.; Fr. Hym. Eur.*, 559.

On trunks. Bay of Islands (334).

Polyporus (Placodermei) Zealandicus. *Cke.*

Pileo suberoso-coriaceo, duro, convexo, supra concentric sulcato, subrugoso, atro-umbrino, margine obtuso, velutino, pallidior; carne zonato, ferrugineo; poris praelongis, stratosi, minimis, rotundatis, fusco-ferrugineis, demum caryophyllaceis.

On trunks. Coromandel (309, 310).

No. 309 is evidently a resupinate form of No. 310. Three to six inches broad, when resupinate extending for nearly a foot. The hymenium is surrounded by a broad sterile, velvety margin, which is scarcely so distinct in the resupinate form. Allied to *P. applanatus*, Fr., but quite distinct.

Polyporus (Placodermei) leucocreas. *Cke.*

Pileo e carnosio suberoso, unguato, glabro, albedo, demum pallido, cute rivuloso-fatiscente, intus niveo, spongioso, tenaci; hymenio convexo, rimoso; poris angulatis, minimis, brevibus, albis. (vix *P. betulinus*.)

On charred wood.

Substance snowy-white, not at all fragile as in *P. officinalis*, but firm and tough; pileus 6 inches across, 4 inches high.

Polyporus (Inodermei) radiatus. *Fr. Hym. Eur.*, 565.

On trunks. Melbourne (Australia).

Polyporus (Inodermei) hirsutus. *Fr. Hym. Eur.*, 567.

On bark. Ottawa (336).

Polyporus (Inodermei) tabacinus. *Mont. Syll.*, 167.

On bark. Wellington (Travers, 363), Maungaroa (319).

Polyporus (Inodermei) versicolor. *Fr. Hym. Eur.*, 568.

On trunks. River Otira, Canterbury Alps (313), Winton (350), Waitaki (345), Banks' Peninsula (330).

Polyporus (Resupinati) catervatus. *Berk. Fl. N. Zeal.*

On bark. Wellington (Travers).

Polyporus (Resupinati) vaporarius. *Fr. Hym. Eur.*, 579.

On bark and wood. Maungaroa (219, 222), Melbourne (Australia, 373).

Polyporus (Resupinati) vulgaris. *Fr. Hym. Eur.*, 578.

On branches. Winton (232).

- Hydnum Sinclairii.** *Berk. in Hook. N. Z. Flora*, p. 756.
On the ground. Maungaroa (320)
- Tremellodon gelatinosum.** *Fr. Hym. Eur.*, 618.
On trunks. Maungaroa (152).
- Kneiffia setigera.** *Fr. Hym. Eur.*, 628.
On naked wood. Waitaki (278).
- Thelephora pedicellata.** *Schuz. Syn. Car.*, t. 2, f. 3.
On bark. Maungaroa (221).
- Hymenochæte rubiginosa.** *Lev. Fr. Hym. Eur.*, 641.
(sub *Stereum*).
On bark. Wellington (Travers. 370).
- Hymenochæte rhabarbarina.** *Berk. Flor. N. Zeal.* (sub *Corticium*).
On bark and wood. Otawa (335).
- Hymenochæte phæa.** *Berk. in Fl. N. Zeal.* (sub *Stereum*)
On bark. Waima (338).
- Stereum vellereum.** *Berk. in Fl. N. Zeal.*
On branches. Wellington (Travers, 373), Waitaki (279, 270, 257), Winton (351), Maungaroa, Melbourne, (Australia 365).
- Stereum decipiens.** *Berk. in Herb.*
On charred wood. Melbourne (Australia).
- Stereum lobatum.** *Kze. Fr. Epic.*, 547.
On trunks. Hokianga (337), Wellington (Travers, 369), Ohaeawai (340).
- Stereum acerinum.** *Fr. Sys. Myc. i.*, 453.
On twigs. Wellington (Travers, 376).
- Stereum pannosum.** *Cke.*
Pileo coriaceo, rigido, effuso-reflexo, cinereo, subzonato, hirsuto; hymenio nudo, glabro, radiato-rimoso laceratove, cinereo, demum pruinoso.
On bark of trees. Dunedin (315), Waitaki (342).
Effused for three or four inches, with the margin torn and split, separable, slightly reflexed above and villous. Entirely cinereous.
- Stereum versiforme.** *B. & Curt. N. Amer. Fungi*, No. 242.
On wood. Melbourne (Australia).
- Corticium læve.** *Fr. Hym. Eur.*, 649.
On branches. Wellington (Travers, 374).
- Corticium serum.** *Fr. Hym. Eur.*, 659.
On bark, &c. Waitaki (260).
- Peniophora crustosa.** *Cke. sp. nov.*
Effusa, crassa, dura, perennis; hymenio irregulari-lobato, pallido, lævi, velutino; margine subelevato; setulis obclavatis, hyalinis, asperulis (0.4×0.15 mm.).
On bark. Waitaki (347).
Resembling in appearance *Stereum annosum*, B. & Br., but with the characteristic bodies on the hymenium, which are peculiar to *Peniophora*. Spores elliptic or reniform, 0.007×0.003 mm.
- Cyphella muscigena.** *Fr. Hym. Eur.*, 663.
On mosses. Melbourne (Australia).

Cyphella Curreyi. *B. & Br. Fr. Hym. Eur.*, 663.

On branches. Melbourne (Australia, 376).

Cyphella Zealandica. *C. & Phil.*

Sparsa, sessilis, pallida, villosa, 1-3 mm. diam. Cupulis excavatis, margine incurvo. Spores ellipticis, infra apiculatis (0.024×0.015 mm.).

On bark and twigs. Winton (230).

The dense flexuous hairs are about three to four-tenths of a millimetre long. A most distinct and notable species. I am indebted to my friend, Mr. W. Phillips, of Shrewsbury, for assistance in the examination of this and many of the Discomycetes.

Clavaria amethystina. *Bull. t.* 496, f. 2.

On the ground. Waitaki (3).

Clavaria inaequalis. *Fr. Hym. Eur.*, 674.

On the ground. Waitaki (74).

Clavaria juncea. *Fr. Hym. Eur.*, 677.

On dead leaves. Melbourne (Australia).

Calocera glossoides. *Fr. Hym. Eur.*, 681.

On wood. Waitaki ($\frac{5}{6}$ bis., 343), Wellington (Travers, 363), Melbourne (Australia), Maungaroa.

var. spatulata.

On dead wood. Waitaki (11).

Calocera cornea. *Fr. Hym. Eur.*, 681.

On dead wood. Waitaki (38 bis.).

Pistillaria micans. *Fr. Hym. Eur.*, 686.

On herb stems. Waitaki (78).

Tremella albida. *Fr. Hym. Eur.*, 691.

On branches. Winton (107).

Tremella mesenterica. *Fr. Hym. Eur.*, 691.

On branches. Winton (109).

Tremella foliacea. *Pers. Obs. i.*, 98.

On branches. Wellington (Mr. Travers).

Tremella lutescens. *Fr. Hym. Eur.*, 690.

On branches. Maungaroa, Winton (108).

Exidia tenax. *Che. sp. nov.*

Effusa, applanata, undulato-lobata, fuliginea; papillis minimis conspersa, subtus laevi. Basidiis clavatis, furcatis (?)

On branches. Winton (111).

Very tough, much flattened, and more delicate than *E. glandulosa*, to which it is allied. The specimens are probably immature, no globose basidia were seen.

Hirneola polytricha. *Fr. Fung. Nat.*, p. 26.

On dead trees. Waima, Maungaroa, Waitaki, Coromandel, Westland, Ohaeawai, Hokianga, Wellington (Mr. Travers).

Guepinia pezizæformis. *Berk. Hook Lond. Journ. vi.*, p. 60.

On wood. Melbourne (Australia), Maungaroa, Wellington (365).

Guepinia spathularia. *Fr. Epic.*, p. 566.

On wood. Maungaroa, Winton (110).

Guepinia fissa. Berk. Ann. N. H. x., 383.

On sticks. Winton.

Dacrymyces deliquescens. Fr. Hym. Eur., 699.

On naked wood. Waitaki (83, 271), Winton (77), Wellington (Mr. Travers).

Coryne rugipes. Cke. sp. nov.

Minima. Stipite rugoso sulcato, pallido; capite ochraceo, depresso-globoso, lævi, glabro; sporis minutis, linearibus.

On wood. Waitaki (82).

Not more than a quarter of an inch high. It is a *Coryne*, as interpreted by Berkeley, and not by Tulasne.

Cyathus similis. Cke. sp. nov.

Campaniformis, sessilis, superne late apertis, striis plane destitutus, extus pallide ochraceus, sericeo-tomentosus, intus fusco-cinereus. Sporangia ellipticis, nigris, lævibus; tunica crassa. Sporidia ovatis, hyalinis.

On the ground. Banks' Peninsula (216).

Sporangia $3\frac{1}{2} \times 2\frac{1}{2}$; epiderm $\frac{1}{10}$ mm. thick; spores $.012 \times .009$ mm.

Greatly resembling *C. vernicosus*, DC., but distinct in the sporangia and spores. Probably it was this which Berkeley referred doubtfully to *C. Emodense*, B.

Cyathus vernicosus. DC. Cke. Hdbk., No. 1199.

On the ground. Wellington (Travers).

Crucibulum vulgare. Tul. Ann. Sc. Nat. 1844, 90.

On dead wood. Waitaki, River Bealey, Little River, Otira, Winton, Wellington (Travers).

var. **lanosum.** Cke.

Paler than in the usual form, externally woolly. Sporangia $1\frac{1}{2}$ mm., brownish; sporidia shorter by nearly one-third. A very neat variety, perhaps a distinct species.

On sticks. Wellington (Mr. Travers).

Sphaerobolus stellatus. Tode. Cke. Hdbk., No. 1202.

On dung. Winton (120).

Ileodictyon cibarium. Tul. Berk. in El. N. Zeal. ii., 188.

On the ground. Waitaki, Winton.

Aseröe rubra. Labill. Fl. N. Holl.

On the ground. Hokieika, Winton.

Mitremyces fuscus. Berk. in Flora Tasm.

On the ground. Melbourne (Australia).

Scleroderma vulgare. Fr. Sys. Myc. iii., 46.

On the ground. Wellington (Mr. Travers), Banks' Peninsula (327).

Lycoperdon reticulatum. Berk. Fl. N. Zeal. ii., 190.

On the ground. Melbourne (Australia).

Bovista lilacina. Mont. & Berk. in Hook. Lond. Journ., 1845, 64.

On the ground. Waitaki.

Lycoperdon gemmatum. Fr. Sys. Myc. iii., 36.

On the ground. Maungaroa (223), Waitaki (57-58).

Lycoperdon pyxiforme. *Schff., t. 189.*

On the ground and stumps. Waitaki (300), Ohacawai (341), Melbourne (Australia).

Geaster fimbriatus. *Fr. Sys. Myc. iii., 16.*

On the ground. Maungaroa.

Polysaccum pisocarpium. *Fr. Sys. Myc. iii., 54.*

On the ground, Lake Taupo; with empty peridia from other localities.

Secotium erythrocephalum. *Tul. Berk. in Fl. N. Zeal. ii. 187.*

In grassy places. Banks' Peninsula, Waitaki, Dunedin, Maungaroa, Wellington (Mr. Travers).

Paurocotylis echinosperma. *Cke. sp. nov.*

Depresso-globosa (vix 1 c.m.), extus carneo-fulva, intus marmorata. Sporis globosis, echinulatis (0.12-0.14 mm. diam.).

On wood. Melbourne (Australia, 360).

A very distinct species of this very curious genus, which seems much more closely related to *Gasteromyces* than to *Physomyces*.

Paurocotylis fulva. *Berk. & Br. Ceyl. Fungi, No. 1181.*

var. **Zelandica.**

On woods. (Winton (401).

The spores are larger, and more distinctly coloured than in the original typical specimen of *P. fulva*, but we hesitate to separate it on the faith of a single specimen.

Craterium vulgare. *Ditm. in Cke. Myx., p. 18.*

On herbs. Maungaroa (220).

Lycogala epidendron. *Buxb. Cke. Myx., p. 75.*

On wood. Wellington (Mr. Travers).

Stemonitis ferruginea. *Ehr. Cke. Myx., p. 47.*

On rotten wood. Wellington (Mr. Travers).

Trichia fragilis. *Sow. Cke. Myx., p. 62.*

On dead wood. Winton (229).

Trichia varia. *Pers.; Cke. Myx., p. 63.*

On twigs, &c. Waitaki (81).

Rhizopogon luteolus. *Tul. Hyp.*

In the ground. Maungaroa (163), Bank's Peninsula.

Rhizopogon induratus. *Cke. sp. nov.*

Durissimus, depresso-globosus, fuscus, capillamentis paucis obvolutus; peridia crasso corneo, carne minutissime cellulosa (vix distincta) cinereo-fusca; sporis hyalinis, arcte ellipticis, binucleatis (0.07 x 0.03 mm.).

On the ground. Bank's Peninsula (403).

About one inch in diameter. When dry it is exceedingly hard, so that it can scarcely be cut; the surface then resembles buffalo horn.

Phoma nebulosum. *Berk. Outl., p. 314.*

On *Cruciferae*. Bank's Peninsula (331).

Phoma viridisporum. *Cke. sp. nov.*

Sparsum, cuticulâ nigro-factâ tectum. Peritheciis applanatis, sporis cylindrico-ellipticis, rectis, viridis (0.01 x 0.04 mm.).

On *Phormium*. Banks' Peninsula (328), Dunedin.

Sacidium Ixerbæ. *Cke. sp. nov.*

Epiphyllum, gregarium. Peritheciis atris, prominulis, nitidis. Sporis sub-globosis, hyalinis (0.007×0.006 mm. vel exacte globosis).

On upper surface of leaves of *Ixerba brexioides*. Tuaranga (326).

Discella lignicola. *Cke. sp. nov.*

Sparsa, erumpens. Peritheciis punctiformibus, atris, demum aperitis; disco fuligineo. Sporis cylindraceis, hyalinis (0.02×0.0035 mm.).

On naked wood. Dunedin (243).

Accompanied by a minute *Phoma*.

Dinemasporium graminum. *Lew. Ann. Sci. Nat.*, 1846, 274.

On grasses. Banks' Peninsula (332).

Ceuthospora foliicola. *Lib. exs. sub. Cytispora.*

On leaves. Waitaki (252).

Bactridium magnum. *Cke. sp. nov.*

Pulvinatum, sub-hemisphericum, vel irregularis (1.5 mm.) pallidum. Sporis clavatis, 5-9 septatis, magnis, hyalinis (0.3 mm. long, vel ultra).

On naked wood. Whangaroa (386); Waitaki (295); Mangaroa, Melbourne (Australia).

A more imposing species than *B. flavum*. There is no record of its colour in the living state.

Æcidium senecionis. *Desmz. Ann. Sci. Nat.*, 1836, p. 243.

On *Senecio vulgaris*. Waitaki.

Ustilago urceolorum. *Tul. Ann. Sci. Nat.*, 1847, 102.

On *Carex ternaria*. Lake Taupo, Tauranga (217).

Ceratium hydroides. *A. & S. Consp.*, t. 2. f. 7.

On wood. Waitaki (65).

Ceratium roseum. *Cke. sp. nov.*

Roseum, gregarium; clavulis furcato-ramosis, brevibus. Sporis ovalibus, hyalinis (0.012×0.01 mm.).

On rotten wood. Winton (113).

Although colourless when dried, the drawing which accompanied it gives distinctly the form, and bright rose colour. It nevertheless requires better knowledge of its life-history before its affinities become certain.

Ceratium fuscum. *Cke. sp. nov.*

Aurantium vel fuscum, gregarium; clavulis breviter ramosis, congestis, confluentibus. Sporis sub-ellipticis, hyalinis (0.014×0.01 mm.).

On rotten wood. Waitaki (112, 297).

More compact than *C. roseum*, retaining a somewhat ferruginous colour when dry.

Cladosporium sphæroideum. *Cke. sp. nov.*

Punctiforme, atrum, gregarium, compactum. Cæspitulis hemisphericis, velutinis, atris. Hyphis dense fasciculatis, brevibus, septatis, sporisque olivaceis (sporis $0.02-0.04 \times 0.007$ mm.).

On leaves of *Poa foliosa*. Canterbury Alps (398).

In habit resembling a *Sphæria* or *Venturia*.

Morchella conica. Pers. *Cke. Mycogr.*, t. 81, fig 315.
On the ground. Wellington (Mr. Travers).

Gyromitra esculenta. Fr. *Cke. Mycogr.*, t. 89, f. 328.
On the ground. Wellington (Mr. Travers).

Leotia lubrica. Pers. *Cke. Mycogr.*, t. 44, f. 171.
On the ground. Melbourne (Australia).

Geoglossum glabrum. Pers. *Cke. Mycogr.*, t. 3, f. 9.
Var. minor.
On the ground. Waitaki (6).

Geoglossum Walteri. Berk. *Cke. Mycogr.*, t. 1, fig. 4.
On the ground (?) Melbourne (392).

Geoglossum hirsutum. Pers. *Che. Micogr.*, t. 1, f. 3.
Var. Leotioides. Cke.

Clavulis inflatis, ovatis, depressis, vel collapsis.

On the ground. Winton (213).

The clubs collapse and overhang the stem, as in *Leotia*, but the fruit does not differ sufficiently to warrant its separation as a distinct species.

Peziza (Macropodes) bulbosa. Hedw. *Cke. Mycogr.*, t. 48, f. 189.

On the ground. Melbourne, Australia (394).

Peziza (Cochleata) aurantia. Vahl. *Cke. Mycogr.*, t. 52, f. 203.
Forin minor.

On the ground. Waitaki (37).

None of the specimens an inch in diameter, yet there are no features which constitute a specific difference.

Peziza (Discina) lumbricalis. *Cke. sp. nov.*

Magna, cupulata, demum expansa, revoluta, applanata; extus subglabra, vel farinosa; intus pallido-fusca. Asci longe attenuatis, cylindraceis (02 mm.). Sporidiis ellipticis, binucleatis (01-012 × 005 mm.).

On the ground. Waitaki (72).

Cups 1 to 3 inches, or more, in diameter. Resembling *P. palmicola*, B. & C., but larger, and with different fruit.

Peziza (Humaria) carbonigena. Berk. *Fl. Tasm. ii.*, 274. Cooke.
Mycogr., t. 8, f. 29.

Overrunning wood, moss, leaves, &c., on which it forms a membranaceous stroma upon which the cups are seated. Winton (124).

Peziza (Humaria) fusispora. Berk. *Hook. Journ.*, 1846, p. 5. *Cke. Mycogr.*, t. 8, f. 32.

On the ground. Waitaki (?) (22)

Peziza (Sarcoscypha) Lusatiæ. *Cke. Mycogr.*, t. 37, f. 146.

On wood. Waitaki (31, 32). On moss. Dunedin (205).

Peziza (Sarcoscypha) Dalmeniensis. *Cke. Mycogr.*, t. 39, f. 153.

On dung. Waitaki (117, 299), Melbourne, Australia (396).

Slightly differing in the hairs from the typical form, but apparently not specifically distinct.

Peziza (Sarcoscypha) badio-berbis. Berk. in *Herb.*

On rotten wood. Ohaeawai (206).

Resembling *P. scutellata* in size and general appearance, but with coarsely warted sporidia (022-025 × 012-014 mm.), and very long marginal hairs.

Peziza Kerguelensis. Berk. in *Flor. Ant.*, p. 145. Cke. *Mycogr.*, t. 34, f. 134.

On the ground. Waitaki (274).

Peziza (Sarcoscypha) stercorea. Pers. Cke. *Mycogr.*, t. 38, f. 147.
On dung. Waitaki (84).

Peziza Dasyscypha) flicea. C. & Phil. *sp. nov.*

Nivea, stipitata, sparsa; cupulis (0.1-0.2 mm.) parvulis, villosis, turbinatis, in stipitem brevem productis. Ascis clavato-cylindricis. Sporidiis fusiformibus, biseriatis, guttulatis, demum pseudo-septatis (0.15-0.2 × 0.02-0.03 mm.) Paraphysibus elongato-fusiformibus, acutis.

On ferns. Dunedin (400).

The hairs are septate, smooth, and granularly capitate.

Peziza (Dasyscypha) apala. B. & Br. *Ann. N. H.*, No. 561. Cke. *Hdbk.*, No. 2060.

On *Juncus*. Waitaki (272).

Peziza (Dasyscypha) glabrescens. C. & Phil. *sp. nov.*

Sparsa, stipitata, candida. Cupulis (0.5-1 mm.) cyathiformis, primitis subvillosis, demum nudis, glabris. Ascis clavatis. Sporidiis lanceolatis, utrinque rotundatis, guttulatis (0.15-0.19 × 0.03-0.04 mm.) Paraphysibus filiformibus.

On *Rhipogonum* (?) Melbourne, (Australia 379).

Peziza (Dasyscypha) lanariceps. C. & Phil. *sp. nov.*

Sparsa, stipitata, ochraceo-fusca. Cupulis turbinatis, demum apertis (0.2 mm. diam.), villosis, granulis purpureis conspersis. Ascis clavatis. Sporidiis cylindricis, utrinque attenuatis (0.15-0.2 × 0.03 mm.) Paraphysibus elongato-fusiformibus, acutis.

On *Rhipogonum* (?) Melbourne, (Australia 363).

The external hairs are not more than one-twelfth of a millimetre long, rather rough, mixed with bright purple granules.

Peziza (Dasyscypha) nivea. Fr. *Sys. Myc. ii.*, p. 90.

On rotten wood. Waitaki (286), Omatangi (314).

Peziza (Hymenoscypha) cyathoidea. Bull. t. 316, f. 2. Cke. *Hdbk.*, No. 2092.

On fern stipes. Maungaroa (209).

Peziza (Mollisia) ventosa. Karst. *Myc. Fenn.*, p. 188.

On rotten wood. Waitaki (303).

Peziza (Mollisia) hæmatoidea. C. & Phil. *sp. nov.*

Sparsa, sanguineo rubra, ceraceo-mollis, sessilis. Cupulis demum applanatis (1-1½ mm.), margin elevato. Ascis clavatis. Sporidiis cylindricis, utrinque attenuatis, guttulatis (0.16 × 0.03-0.04 mm.) Paraphysibus filiformibus.

On decorticated wood. Waitaki (100).

Similar to *P. rubella*, P., but firmer, and with different fruit.

Peziza (Mollisia) cinerea. Batsch. Cke. *Hdbk.*, No. 2100.

On rotten wood. Waitaki (79*).

Peziza (Mollisia) crispa. C. & Phil. *sp. nov.*

Aurantiaea, sparsa, sessilis (1-4 mm.). Cupulis concavis, crispulis, subtus pallidior, tenuibus. Ascis cylindraceis. Sporidiis

linearibus (0.08×0.03 mm.), utrinque rotundatis. *Helotium crispulum*, MSS. in Herb.

On wood. Maungaroa (211).

Helotium Berggrenii. *C. & Phil. sp. nov.*

Phyllogenum, pallidum, stipitatum. Cupulis sparsis, cyathiformibus ($0.5-0.7$ mm.) Stipite gracili, æquali (circa $0.5-1$ mm.). Ascis cylindræis. Sporidiis ellipticis, nucleatis ($0.1-0.13 \times 0.03-0.05$ mm.) Paraphysibus filiformibus.

On dead leaves. Melbourne, (Australia 369).

Helotium claroflavum. *Berk. Cke. Hdbk., No. 2 50.*

On wood. Melbourne, Australia (368), probably also Waitaki (281).

Helotium brevisporium. *C. & Phil. sp. nov.*

Ochraceum, sessile, sparsum ($1-3$ mm.). Cupulis applanatis, concavis; margine pallido, elevato. Ascis cylindricis. Sporidiis breviter ellipticis, demum uniseptatis ($0.07-0.1 \times 0.03-0.04$ mm.) Paraphysibus linearibus.

On decorticated sticks. Waitaki (30 b).

Described with some hesitation as the specimen was small. It is therefore subject to future confirmation.

Helotium phormium. *Cke. sp. nov.*

Erumpens, pallidum, stipitatum. Cupulis clavatis, dein plano-concavis (0.5 mm.) difformibus. Stipite amplo, deorsum attenuato. Ascis clavatis. Sporidiis subclavatis, utrinque rotundatis, nucleatis, curvulis ($0.3-0.35 \times 0.05$ mm.).

On *Phormium tenax*. Maungaroa (388).

Helotium lacteum. *Cke. sp. nov.*

Sparsum, lacteum, sessile. Cupulis concavis ($2-3$ mm.), margine flexuoso. Ascis cylindræis. Sporidiis uniseriatis, lanceolatis, nucleatis ($0.2-0.3 + 0.04-0.06$ mm.) Paraphysibus filiformibus.

On very rotten wood. Maungaroa (387).

Diaphanous, milky white when fresh, ochraceous when dry.

Helotium citrinum. *Hedw. Cke. Hdbk., No. 2145.*

On rotten wood. Waitaki (30, 30 bis, 203, 53, 20), Dunedin 202), Winton (122), Maungaroa (233), Wellington (Travers, 361).

Var. pallidum.

Banks' Peninsula (329), Waitaki (287, 304, 298, 292, 38).

Chlorosplenium omnivirens. *Berk. in Fl. Tasm. Sub. Peziza.*

On rotten wood. Waitaki (29).

Resembling *C. æruginosum* in habit and external appearance, but the sporidia are $0.18-0.2$ mm. long, whilst in *C. æruginosum* they are about $0.06-0.07$ mm. long. In *C. æruginum*, Berk., the sporidia are about $0.1-0.12$ mm. long. In *C. æruginellum*, Karst., they are stated to be $0.07-0.12$ mm. long. In *C. æruginosum*, Karst., they are described as $0.1-0.14$ mm. long—which is not our *C. æruginosum*, the latter being probably *C. æruginascens*, Karst., with sporidia $0.06-0.08$ mm. long.

Ascobolus furfuraceus. *Pers. Cke Hdbk., No. 2200.*

On dung, with *Peziza stercorea*. Waitaki (84).

Bulgaria sarcoides. *Fr. Syst. Myc. ii., 168. Cke. Hdbk., No. 2218.*
Spermatia.

On wood. Melbourne (Australia), Waitaki (69), Winton, Winton (119), with asci.

Ombrophila violacea. *Fr. Sum. V. Scan. Var. australis.*

On twigs, &c. in swampy places. Melbourne, Australia (401).

Not differing from the type in fructification, but with a longer flexuous stem, and apparently more cinereous.

Cyttaria Gunnii. *Berk. in Hook. Lond. Jour., 1848, 576.*

On trunks. Wellington (Travers).

BERGGRENIA. *Cke.*

Carnosa, inflata, subsessilis, intus hymenio effuso obducta. Sporidiis amplis, ascigeris. *Gard. Chron., Oct., 1879.*

Berggrenia aurantiaca. *Cke. sp. nov.*

Obovata, vel spathulata, sessilis, aurantiaca, ad basin plicata, demum rupta. Ascis cylindraceis. Sporidiis amplis, ellipticis, hyalinis ($0.22-0.25 \times 0.16-0.18$ mm.).

On wood. Waitaki (55, 68).

Dermatea fumosa. *C. & Ph. sp. nov.*

Sparsa, sessilis. Cupulis demum expansis (2-4 mm.), extus pallidis, granulosis, margine elevato, flexuoso. Hymenio murinaceo. Ascis clavatis, longe stipitatis. Sporidiis lanceolatis, rectis vel curvulis, endochromate quinque-divisis ($0.25-0.35 \times 0.04-0.06$ mm.)

On rotten wood. Dunedin (207).

Stictis virginea. *C. & Phil. sp. nov.*

Sparsa, erumpens, nivea. Matrice stellata-fissurato ($0.05-0.08$ mm.) Ascis cylindraceis. Sporidiis filiformibus (0.25 mm.). Paraphysibus filiformibus, flexuosis.

On twigs. Waitaki (289).

A very neat and distinct species.

Stictis punctiformis. *Pers. Syn., 674.*

On naked wood. Waitaki (283, 288).

Hysterium phormigenum. *Cke. sp. nov.*

Sparsum, erumpens, tenue. Peritheciis elongato-ellipticis, parallelis; labiis erosis, rigentibus, tenuibus, atris; disco cinereo. Ascis clavatis. Sporidiis ellipticis, uniseptatis, brunneis ($0.2-0.25 \times 0.08$ mm.).

On *Phormium tenax*. Winton (390).

A singular species, with no immediate allies.

Cordyceps Robertsii. *Berk. in Fl. N. Zeal. ii., 202.*

On larvæ.

Claviceps purpurea. *Tul.*

On grasses. Auckland.

Only the *Sclerotium* represented.

Hypocrea vinosa. *Cke. sp. nov.*

Orbicularis, convexa, atro-vinosa (2-3 mm.), ostiolis vix distincta. Ascis cylindraceis. Sporidiis dissilientibus, cellulis subglobosis ($\cdot 306\text{--}\cdot 007$ mm.), hyalinis.

On dead wood. Waitaki (307).

Sporidia larger than in *H. rufa*, which it somewhat resembles in habit.

Hypocrea Berggreni. *Cke. sp. nov.*

Erumpens, discoidea, umbrino-vinosa (2 mm.), intus pallida, sæpe gregaria. Peritheciis nec non perfecte evolutis.

On branches.

This is certainly an *Hypocrea*, very similar in character to *H. Richardsoni*, Berk., although no fructification or even perfect perithecia could be found. It is very distinct, externally resembling, at a superficial glance, *Diatrype disciforme*, in the size and form of the stroma, and habit of growth.

Nectria Zealandica. *Cke. sp. nov.*

Cæpitosa, testaceo-rubra, erumpens. Cæspitulis convexis. Peritheciis subglobosis, lævibus, papillatis, mox depressis, vel concavis. Ascis clavatis. Sporidiis biserialis, ellipticis, uniseptatis, constrictis, hyalinis ($\cdot 02\text{--}\cdot 025 \times \cdot 008\text{--}\cdot 01$ mm.).

On bark. Little River, Banks' Peninsula (305), Maungaroa (321).

Closely allied to *N. pulcherrima*, B. & Br., but perithecia darker, and sporidia rather smaller.

Nectria quisquiliaris. *Cke. sp. nov.*

Sparsa, succinea, vel subaurantia. Peritheciis lævibus, hinc illic congestis, nec cæspitosis. Ascis cylindraceis. Sporidiis uniserialis, ellipticis, uniseptatis, vix constrictis ($\cdot 016\text{--}\cdot 02 \times \cdot 008$ mm.). Conidiis in stromate tuberculoideis enatis, elongato-ellipticis, nucleatis, hyalinis ($\cdot 012\text{--}\cdot 014 \times \cdot 004$ mm.).

On the outside and inside of fallen bark, fragments of wood, &c. Dunedin (123, conidia), Melbourne, (Australia 389, 362).

Nectria coccinea. *Fr. Sys. Myc. ii., 412.*

On branches. Dunedin (306).

Nectria sanguinea. *Fr. Sys. Myc. ii., 453.*

On bark. Wellington (Travers).

Nectria Otagensis. *Curr. Roy. Soc. Edin.*

On bark. Dunedin, Waitaki (208).

Nectria illudens. *Berk. Fl. N. Zeal. ii., 203.*

On bark. Waitaki.

Xylaria corniformis. *Mont. Ann. Sc. Nat., 1855, 104.*

On branches. Waitaki (5).

Xylaria castorea. *Berk. in Fl. N. Zeal., t. 105, f. 11.*

On dead wood. Wellington (Mr. Travers).

Xylaria rhytidophlæa. *Mont. Ann. Sci. Nat., 1855, 101.*

On wood. Melbourne (Australia, 402).

Xylaria apiculata. *Cke. sp. nov.*

Simplex, gracilis, stipitata, atra. Capitulis cylindricis, superne apiculatis. Peritheciis prominulis, papillatis; stipite velutino. Ascis cylindraceis. Sporidiis uniseriatis, lanceolatis, subcurvulis, atro-brunneis ($\cdot 02\text{--}\cdot 022 \times \cdot 007$ mm.).

On wood. Maungaroa (214).

The stem from 1 inch to $1\frac{1}{2}$ inches long, the capitulum about half an inch long and 1 line diameter, surmounted by a distinct spine-like apiculus.

Xylaria Zealandica. *Cke. sp. nov.*

Simplex, gracilis, stipitata, atra. Capitulis cylindricis, rugosis, supra obtusis. Stipite glabro, canaliculato, convoluto. Ascis cylindraceis. Sporidiis late fusiformibus, uninucleatis, atro-brunneis ($\cdot 032\text{--}\cdot 035 \times \cdot 01$ mm.).

On dead wood. Wellington (Travers).

Only one specimen in the collection. Stem 1 inch to $1\frac{1}{2}$ inches long, grooved longitudinally, and twisted. Capitulum three-quarters of an inch long, reticulated; ostiola minute, following the reticulations.

Xylaria tuberiformis. *Berk. in Fl. N. Zeal., t. 105, f. 11.*

On dead wood. Bay of Islands (215), Winton (224).

Cornelia uberata. *Fr. Sys. Myc. ii., 535.*

On *Podocarpus totara*. Little River (235).

Hypoxyton concentricum. *Fr. Sys. Myc. ii., 231.*

On stumps, &c. Coromandel, Bank's Peninsula, Waitaki, Wellington (Travers).

Hypoxyton exutans. *Cke. Linn. Journ. xvii., 143. Sub Diatrype.*

On bark. Maungaroa (240).

Hypoxyton semi-immersum. *Ntke. Pyr. Germ., p. 50.*

On rotten wood. Winton (225).

Hypoxyton annulatum. *Mont. Syll., 213.*

On bark. River Bealey, Canterbury Alps (249).

Hypoxyton allantoideum. *Cke. sp. nov.*

Parallelum, convexo-planum, atrum, elongatum, utrinque truncatum. Ostiolis punctiformibus; intus fuligineo-atris. Ascis cylindraceis. Sporidiis arcte ellipticis, continuis, atro-brunneis, ($\cdot 012\text{--}\cdot 014 \times \cdot 0045$ mm.).

On naked wood. Waitaki (250).

Melogramma gyrosa. *Tul. Carp. ii., 89.*

Spermatia only.

On bark. Little Island (247), Maungaroa (321), Winton (227), Dunedin (246).

Diatrype glomeraria. *Berk. Fl. N. Zeal., t. 106, f. 13.*

On *Rhipogonum*. Waitaki (253), Dunedin (244 and 245), Maungaroa (239), Little River (248), Wellington (Travers, 364).

Massaria australis. *Cke. sp. nov.*

Sparsa, tecta, inconspicua. Peritheciis depressis. Ascis clavatis. Sporidiis lanceolatis, uniseptatis, constrictis, brunneis ($\cdot 045$ - $\cdot 05 \times \cdot 012$ - $\cdot 014$ mm.). Stylosporis consortis, clavatis, 3-5 septatis, brunneis ($\cdot 05 \times \cdot 014$ mm.), hyalino-stipitatis.

On bark. Melbourne (Australia, 367).

The stylospores are of the nature of a *Coryneum*.

Sordaria curvula. *Winter. var. coronata.*

On dung with *Peziza* (No. 299).

Psilosphaeria mammæformis. *Pers. Syn., p. 64. Sub Sphaeria.*

On wood. Maungaroa (238), Waitaki (277 and 250 ?).

Psilosphaeria mammoidea. *Cke. sp. nov.*

Sparsa, denudata. Peritheciis subglobosis, ad basin applanatis, atris, glabris, nitidis. Ascis cylindraceutis. Sporidiis ellipticis, continuis, brunneis ($\cdot 016$ - $\cdot 018 \times \cdot 008$ mm.).

On rotten wood. Wellington (Mr. Travers).

Lasiosphaeria ovina. (*Pers.*) *Cke. in Grevillea vii., 85. Sphaeria ovina. Pers. Syn. p. 71.*

On branches and wood. Melbourne (Australia), Waitaki (251), Dunedin (234).

Sphaeria tenacis. *Cke. sp. nov.*

Sparsa, punctiformis, tecta. Peritheciis subglobosis, depressis. Ascis cylindraceutis, stipitatis. Sporidiis ellipticis, continuis ($\cdot 01 \times \cdot 005$ mm.), brunneis.

On *Phormium tenax*. Waitaki (391 bis.).

Sphaeria (Caulicolæ) carduicola. *Cke. sp. nov.*

Sparsa, tecta. Peritheciis subglobosis, elevatis, atris, demum epidermide perforatis. Ascis subcylindraceutis. Sporidiis ellipticis, uniseptatis, constrictis ($\cdot 015$ - $\cdot 018 \times \cdot 007$ mm.).

On *Carduus lanceolatus* (?) Maungaroa (316).

Sphaeria (Pleospora) Zealandica. *Cke. sp. nov.*

Sparsa, erumpens. Peritheciis globosis, atris, epidermide fissurato cinctis. Ascis amplis, clavatis. Sporidiis subclavatis, obtusis, septatis, muriformibus, fuliginosis ($\cdot 03$ - $\cdot 032 \times \cdot 016$ mm.).

On *Phormium tenax*. Waitaki (391).

The sporidia are not constricted, and their general form differs from those of *S. australis*.

Sphaeria (Pleospora) herbarum. *Pers. Syn., p. 79. Cke., Hdbk. No. 2692.*

On grasses. Tauranga.

Sphaeria (Pleospora) australis. *Cke. sp. nov.*

Sparsa, erumpens. Peritheciis globosis, atris, prominulis, lævibus. Ascis clavatis. Sporidiis biserialis, sublanceolatis, obtusis, multiseptatis, muriformibus, olivaceo-fuscis ($\cdot 03 \times \cdot 012$ mm.).

On herb stems. Taupo (242).

Variety with larger sporidia ($\cdot 035 \times \cdot 015$ mm.). Tuaranga (397).

Pyrenophora nuda. *Cke. sp. nov.*

Sparsa, cuticulâ nigrofactâ tecta, glabra; cellulis, brunneis. Ascis clavatis. Sporidia biseriatis, ellipticis, medio constrictis, brunneis, septatis, muriformibus ($\cdot 03 \times \cdot 015$ mm).

On leaves of grass. Tauranga (399).

There are no true perithecia. The cells surrounding the perithecial cavity are brown, globose, and readily separable.

Microthyrium microscopicum. *Desm. Ann. Sci. Nat.*, 1841, t. 14, f. 1.

On leaves of *Dacrydium*. Maungaroa (322, 323).

Erysiphe densa. *Berk. in Fl. N. Zeal.*, t. 106, f. 16.

On leaves of *Aristotelia*. Dunedin, Waitaki (296).

Meliola amphitricha. *Fr. Berk. in Fl. N. Zeal. ii.*, 209.

On leaves. Melbourne (381).

ON THE PROPAGATION OF *SPHÆRIA* (*GNOMONIA*) *FIMBRIATA* (PERS.).

By CHARLES B. PLOWRIGHT.

In December, 1878, I planted in my garden two small specimens of hornbeam (*Carpinus betulus*), which were found growing in a hedge, and had still attached to their branches the withered leaves plentifully attacked by the *Sphæria*. Owing to their removal, the old leaves of these shrubs fell off, and were blown away long before the green leaves burst their buds in spring, which did not take place until the end of May.

On the 1st June, I tied four fragments of a leaf, each of which contained a cluster of perithecia with mature sporidia in them, upon four places, on one of the hornbeams. It was found most convenient to attach these fragments between the leaves of a terminal bud, and to retain them *in situ* by a twist or two of sewing cotton. The experiment was watched from time to time, but it was not until the 12th July that anything was observed. On this day, however, numerous minute black specks were visible upon the leaves experimented upon. The cotton was then unwound and the infecting fragments removed. In due course the black spots developed into typical specimens of *Sphæria fimbriata*. The hornbeams have been under observation ever since, but up to the present time (November) no further development of the *Sphæria* has taken place. This is the more noteworthy because the shrub which was not subject to experiment had, when first planted, the greater number of affected leaves upon it, but on not a single leaf has the parasite shown itself this year; nor on the other hornbeam has a single perithecium developed itself, save at the points inoculated.

I have thus the pleasure of confirming my friend, Dr. Max Cornu's conclusion, that these ascigerous parasites are confined to

the deciduous foliaceous organs, which he arrived at in experimenting with *Rhytisma acerinum*.*

These observations are not without interest in showing the connection which exists between the *Phacidiacei* and the *Sphæriacei*, physiologically as well as structurally, and afford an explanation of the abundance of *Sphæria fimbriata* where it occurs, as compared with the allied species, *S. coryli*; the hornbeam being a tree in which the dead leaves remain attached to the twigs, as a general rule, well through the winter and into the spring, until the sporidia arrive at their most perfect state of maturity.

NATAL FUNGI.

By M. C. COOKE.

The following is an enumeration of a small collection of Fungi in the Kew Herbarium, communicated from Natal by J. M. Wood. The Agaricini have been determined by Herr C. Kalchbrenner. There are a few numbers still to be examined:—

Agaricus (Lepiota) sulfurellus. *Kalch.*

Totus sulfureus. Pileus e convexo planus, umbonatus, vix pollicem latus, in umbone umbrinus, ceterum squamulis verrucæformibus, sparsis, umbrinis notatus, margineque striatus, stipes tenuis, fistulosus, æqualis, glaber. Annulus membranaceus, pendulus. Lamellæ approximatae, vix confertæ, ventricosæ. Sporæ late ovatae, 0.06×0.035 mm.

Port Natal. No. 387.

The paper in which the dried specimens were enclosed was stained of a bright yellow.

Agaricus (Clitocybe) sinopicus. *Fr. Hym. Eur.*, 95.

In woods.

No. 395.

Agaricus (Collybia) macilentus. *Fr. Ep. 11.*, p. 123.

On the ground.

No. 401.

Agaricus (Pleurotus) perpusillus. *Fr. Hym. Eur.*, 181.

On trunks.

No. 191.

Agaricus (Pholiota) unicolor. *Fl. Dan.*, t. 1071, fig. 1.

On trunks.

No. 390 (pusio).

Agaricus (Psilocybe) squalens. *Fr. Hym. Eur.*, 303.

About trunks.

No. 383.

Agaricus (Panæolus) pepilionaceus. *Fr. Hym. Eur.*, 311.

On the ground.

Nos. 385, 379, 391, 397.

Agaricus (Psathyrella) subtilis. *Fr. Hym. Eur.*, 316.

On dung.

No. 382.

* "Comptes Rendus," July, 1878. Translated by Mr. T. Howse, "Grevillea," Vol. vii., p. 101.

- Agaricus (Psathyra) disseminatus.** *Fr. Hym. Eur.*, 316.
On trunks. No. 400 prox.
- Coprinus niveus.** *Fr. Hym. Eur.*, 325.
On dung. No. 384.
Nos. 377, 388, 389. Indeterminable.
- Polyporus (Pleuropus) affinis.** *Nees. Fr. Epic.*, 445.
On trunks. No. 419.
- Polyporus (Pleuropus) flabelliformis.** *Klotsch. Fr. Epic.*, 444.
On trunks. No. 422.
- Polyporus (Pleuropus) rhipidius.** *Berk. Hook. Journ.*, 1847, 319.
On branches. No. 351.
- Polyporus**—sterile and indeterminable.
On wood. No. 427.
- Cladoderris australica.** *Berk.*
On trunks. No. 239.
- Stereum nitidulum.** *Berk. in Hook. Jour.*, 1843, p. 639.
On sticks. No. 396.
- Tremella lutescens.** *Fr. Epic.*, 588.
On branches. No. 398.
- Hirneola fusco-succinea.** *Mont. Syll.*, p. 181.
On trees. No. 108.
- Hirneola auricula-Judæ.** *Fr. Hym. Eur.*, p. 695.
On trees. No. 412.
- Cyathus Pöppigii.** *Tul. Mem. Nid.*, t. 4, f. 23-25.
On the ground and wood. No. 334.
- Podaxon circinomalis.** *Fr. Sys. Myc.* iii., p. 62.
A small form. No. 405.
- Broomela congregata.** *Berk. in Hook. Lond. Jour.* iii., 193.
On wood. No. 426.
- Scleroderma vulgare.** *Fr. Sys. Myc.* iii., p. 46.
On the ground. No. 374.
- Scleroderma bovista (?)** *Fr. Sys. Myc.* iii., 48.
Too immature for certain identification.
On the ground. No. 369.
- Arcyria punicea.** *Pers. Cke. Brit. Myx.*, p. 69.
On wood. No. 322.
- Physarum cinereum.** *Batsch. (?) Cke. Brit. Myx.*, p. 13.
In very bad condition.
On bark. No. 425.
- Darluka filum.** *Cast. Cke. Hdbk.*, 1285.
On *Uredo phaseolorum*. No. 89.
- Æcidium stobæ.** *K. & C.*
Peridiis (3-5) in cæspitulis congestis, albis. Margine fimbriato-laceratis. Sporidii hyalinis, subglobosis (·028-·03 mm.).
On leaves of *Stobæa*. Natal. No. 63.
The peridia resemble in form those of *Ræstelia lacerata*, but are snowy white. The large spores are probably coloured when fresh—but this cannot be determined from the dried specimens. The

cells of the peridium are much elongated. It is succeeded by *Puccinia stobæa*, MacOwan.

Æcidium aroideum. Cke.

Peridiis in cæspitibus congestis, parvulis, semi-immersis; margine leniter dentato. Sporis subglobosis, lævibus, $\cdot 015\text{--}\cdot 018$ mm., coloratis.

On leaves of *Stylochiton*.

No. 114.

Apparently distinct from *Æcidium ari*, B. The colour of the spores when fresh is not indicated.

Æcidium vignæ. Cke.

Peridiis sparsis, semi-immersis; margine albo dentatis. Sporis lævibus, subglobosis, $\cdot 015\text{--}\cdot 017 \times \cdot 02\text{--}\cdot 022$ mm., coloratis.

On leaves of *Vigna marginata*.

No. 407.

Spores probably yellow. The peridia occupy the greater portion of leaf or stipule, and hence distinct from other described species on *Leguminosæ*.

Trichobasis cichoracearum. Lev. Ann. Sci. Nat. Cke. Hdbk., 1482.

On *Bidens pilosa*.

No. 230.

Trichobasis labiatarum. Lov. Ann. Sci. Nat. Cke. Hdbk., 1474.

On *Leucas*.

No. 5.

Uredo phaseolorum. DBy. Ann. Sci. Nat.

On *Phaseolus* in gardens.

No. 89.

The Uredo form of *Uromyces phaseolorum*, DBy.

Uredo macrospermum. Cke. sp. nov.

Hypophyllum, sparsum. Soris hemisphericis, aurantiacis, demum pallescentibus. Sporis sub-lanceolatis, utrinque obtusis, lævibus ($\cdot 045 \times \cdot 016\text{--}\cdot 018$ mm.).

On *Pteris*.

No. 61.

This species was originally determined on fronds of *Onoclea*, from the United States.

Puccinia Africana. Cke.

Pustulis compactis, minimis, in cæspitibus circinantibus; sporis clavatis, vel fusiformibus, constrictis, fuscis, $\cdot 05 \times \cdot 015$ mm., episporio supra incrassato. Pedicellis hyalinis, persistentibus.

On leaves of *Spilanthes Africana*.

No. 200.

The Uredo-spores are at present unknown.

Puccinia purpurea. Ceoke in *Grevillea* V., p. 14.

On *Sorghum*.

No. 229.

The Uredo form only.

Puccinia momordicæ. Kalch. MSS.

On leaves of *Momordica*.

No. 141.

Spores $\cdot 035\text{--}\cdot 04 \times \cdot 25$, deeply constricted, dark brown; episporium reticulated. Identical with specimens under the above name from Herr Kalchbrenner.

Uromyces circinalis. Kalch. & Cke., in *Herb. Kalchb.*

Amphigenum. Soris minimis, circinatis, vel sparsis, purpureo-fuscis. Sporis ovalibus, vel subovatis, lævibus ($\cdot 02\text{--}\cdot 025 \times \cdot 015\text{--}\cdot 018$ mm.); pedicellis hyalinis, tenuibus, deciduis.

On leaves,

No. 231.

Uromyces Thwaitesii. Berk. & Br., in *Ceylon Fungi*, No. 824.

On *Sida*. No. 406.

Cercospora leonitidis. Cke. sp. nov.

Hypophylla. Maculis fuscis. Hyphis brevibus, tenuibus, hyalinis, sparsis, simplicibus. Sporidis cylindraceis, superne attenuatis, hyalinis, 3-septatis ($0.4-0.5 \times 0.03$ mm.).

On leaves of *Leonitis ovata*. No. 5.

Dermata rufa. Cke. sp. nov.

Sparsa, erumpens, fusco-rufa, carnosu-coriacea. Cupulis in stipitem brevem productis, disco excavato, rufo ($1.2-3$ mm.); extus farinaceo, aureo-fusco; carne concolori. Ascis clavatis. Sporidiis fusiformibus, rectis vel curvulis ($0.35-0.4 \times 0.05-0.06$ mm.); quadrinucleatis, hyalinis. Paraphysibus filiformibus.

On bark. No. 400.

When moistened for examination, a golden-brown stain was communicated to the paper on which the cups were placed. There is no intimation whether there is any coloured juice in the fresh specimens.

Hypocrea lycogalæ. Kalch. & Cke., in *Herb. Kalch.*

Rufo-brunnea, intus alba, orbicularis, vel irregulariter lobata, depressa. Peritheciis vix visibilis, minimis. Sporidiis articulis globosis, hyalinis $0.035-0.04$ mm.

On rotten wood, &c. No. 399.

This is the lobed form, whereas the typical Cape form resembles a small *Lycogala*. In other respects they appear to be identical.

Xylaria hypoxylon. Fr. *Sys. Myc. ii.*, 327.

Conidia only.

On stumps. No. 342.

No. 324 is a sterile *Xylaria* indeterminable.

Xylaria rhopaloides. Mont. Berk. *Cuban Fungi*, No. 790.

Conidia only.

On stumps. No. 346.

Poronia punctata. Fr. *Sys. Myc. ii.*, 330.

On dung. No. 404.

Dothidea repens. (Corda). Berk. *Hook. Journ.*, 1854, 231.

On leaves. No. 228.

Dothidea perisporioides. Berk. & C. N. *Amer. Fungi*, No. 880.

On leaves. No. 115.

Meliola polytricha. Kalch. & Cke., in *Herb. Kalchb.*

Hypophylla, vel amphigena, atra, maculæformis. Mycelio effuso, radiato, conidiifero. Conceptaculis globosis; appendiculis erectis, simplicibus, acutis, plerumque flexuosis. Sporangiis ovatis. Sporidiis cylindricis, obtusis, 4-septatis, constrictis, atrobrunneis. Conidiis clavatis, 3-5 septatis (0.5×0.08 mm.), in hyphis erectis flexuosis gerentibus.

On leaves. No. 222.

Conceptacles about one-fifth of a millimetre in diameter. The conidia greatly resemble some species of *Helminthosporium*.

NOTE ON CALIFORNIAN SPHÆRIÆ.

"GREVILLEA," Vol. VII., p. 73.

The plant described by me under the name, *Sphæria propagata*, I have reason to believe is only a form of Schweinitz' *Valsa Vitis*, from which it differs in habit, &c., but not sufficiently so as to be worthy of regard as a distinct species.

By an error in the same paper, the term "ovate" is used instead of "oval" in the description of the sporidia of *Sphæria arctostaphylos*, *sustenta*. and *sambuci*.

CHARLES B. PLOWRIGHT.

WOOLHOPE CLUB, 1879.

The annual meeting of the Woolhope Club commenced this year on the 29th September, at Hereford. A full report of the proceedings during the week will be found in the "Gardener's Chronicle" for October.

In quantity the fungi by no means equalled that of previous years, but in objects of interest the meeting was quite on an equality with its predecessors. The following list does not include the commonest species which may be met with anywhere, but only those worthy of note in an exceptional year. The species found in Great Britain for the first time are accompanied by descriptions, and these may be regarded as a continuation of our records of "New British Fungi."

The presence of the Rev. M. J. Berkeley, Dr. Quelet, Mons. E. Boudier, and Dr. Maxime Cornu, in addition to the usual visitors, will account for the detection of so many additional species.

Agaricus (*Amanita*) *pantherinus*, *Fr.* Cabalva.

" " *vaginatus*, *Fr.* Dinmore.

" " *spissus*, *Fr.* Foxley.

Agaricus* (*Tricholoma*) *atrocinereus*. *P.

Between rigid and fragile; pileus fleshy, convex then plane, at length cracked; disc prominent and darker; stem stuffed, equal, smooth, whitish; gills arcuate adnexed, ventricose, whitish.—*Fr. Icon.*, t. 31, f. 2.

In grassy places. Foxley.

Agaricus (*Tricholoma*) *albobrunneus*, *Fr.* Holm Lacy.

" " *cinerascens*, *Fr.* Holm Lacy.

" " *terreus*, *Fr.* Dinmore.

" " *saponaceus*, *Fr.* Cabalva.

" (*Lepiota*) *seminudus*, *Lasch.* var. *lilacinus*. Holm Lacy.

" " *carcharias*, *P.* Foxley.

" (*Clitocybe*) *metachrous*, *Fr.* Dinmore, Foxley.

" " *inversus*, *Sow.* Foxley.

Agaricus (Clitocybe) amarus. Fr.

Pileus fleshy, convex then plane, obtuse, dry, flocculose, rufescent; stem solid, tough, floccose, becoming smooth, white; gills slightly decurrent, crowded, narrow, white.—*Fr. Hym.*, p. 83.

In woody places. Holm Lacy.

Agaricus (Collybia) xanthopus, Fr. Foxley.

„ „ *conigenus, Pers.* Holm Lacy.

„ „ *cirrhatum, Sch.* Cabalva, Foxley.

„ „ *caulicinalis, Bull.* Cabalva.

Agaricus (Collybia) extuberans. Batt.

Pileus rather fleshy, convex then expanded, umbonate; margin slightly inflexed; stem hollow, thin, equal, straight, rooting, smooth, even; gills nearly free, crowded, narrow, white.—*Fr. Icon.*, t. 67, f. 1.

On the ground and trunks. Foxley.

Agaricus (Collybia) laxipes. Fr. Hym., p. 115.

Pileus rather fleshy, flattened, convex, obtuse, smooth, moist; stem stuffed, velvety rufous, lax, very long; gills free, seceding, distant, broad, ventricose, milk white.—*Quel. Jur.* ii., t. 2, f. 2.

On chips. Holm Lacy.

Agaricus (Collybia) butyraceus, Fr. Dinmore.

„ „ *platyphyllus, Fr.* Dinmore.

„ „ *inolens, Fr.* Cabalva.

„ „ *rancidus, Fr.*

„ (Mycena) *parabolicus, Fr.* Foxley.

„ „ *acicula, Schff.* Foxley.

„ „ *pelianthinus, B.* Foxley.

„ „ *vulgaris, Fr.* Foxley.

Agaricus (Mycena) sudorus. Fr.

Pileus rather membranaceous, convex, umbonate, striate, viscid; stem firm, rooting, even, dry, rather smooth; gills obtuse and adnate with a tooth, somewhat thick, rather distant, white then flesh colour.—*Fr. Hym.*, 138.

On beech trunks. Foxley.

Agaricus (Mycena) lineatus. Bull.

Pileus membranaceous, campanulate, obtuse, smooth, wholly striate in lines; stem thin, even, whitish-villous downwards; gills adnate, rather distant, white.—*Bull. Champ.*, t. 522; *Fr. Hym.*, p. 134; *Fr. Icon.*, t. 78, f. 5.

Amongst moss. Foxley.

Agaricus (Mycena) stanneus. Fr. Hym., 143.

Firm. Pileus membranaceous, campanulate, then expanded, smooth, obsoletely striate, hygrophanous, even when dry, beautifully silky; stem smooth, even, shining, becoming pale, at length compressed; gills adnate with a decurrent tooth, connected by veins, greyish-white.—*Fr. Icon.*, t. 82, f. 2.

Amongst grass in woods. Cabalva.

Agaricus (Mycena) roridus, Fr. Cabalva.

„ „ *tenerimus, B.* Foxley.

Agaricus (Mycena) coccineus. *Sow., t. 197.*

This has hitherto been referred to *Ag. strobilinus*, Fr., but it proves to be quite distinct. The gills are not at all darker at the margin.

On fir cones and twigs. Dinmore.

Agaricus (Mycena) speireus, Fr. Dinmore.

" " *vitis*, Fr. Dinmore.

" " *vitreus*, Fr. Dinmore.

" (*Omphalia*) *fibula*, Fr. Cabalva.

" " *campanella*, Batsch. Cabalva.

" (*Pleurotus*) *tremulus*, Schff. Holm Lacy.

" (*Pluteus*) *cervinus*, Schff. Cabalva.

" " *chrysophæus*, Schff. Cabalva.

Agaricus (Leptonia) chloropolius. *Fr.*

Pileus membranaceous, convex, then flattened, striate, livid, with black scales in the centre; stem fistulose, slender, even, smooth, bluish, turning greenish; gills adnate, pallid.—*Fr. Hym.*, 205.

In grassy places. Cabalva.

Agaricus (Nolanea) inamænus, Fr. Cabalva.

" " *pascuus*, P. Cabalva.

" (*Eccilia*) *atropunctus*, P. Dinmore.

" (*Claudopus*) *variabilis*, Fr. Dinmore.

" (*Pholiota*) *mycenoides*, Fr. Cabalva.

" " *marginatus*, Batsch. Dinmore.

" " *radicosus*, Bull. Dinmore.

" " *mutabilis*, Schff. Dinmore.

" (*Hebeloma*) *mesophæus*, Fr. Dinmore, Cabalva.

Agaricus (Hebeloma) mussivus. *Fr. Hym.*, 237.

Pileus fleshy, convex, then plane, obtuse, viscid, at length squamulose; stem solid, equal, thick, wholly fibrillose, rather pruinose at the apex; gills emarginate, rather crowded, yellowish.

In pine woods.

Agaricus (Hebeloma) petiginosus. *Fr. Hym.*, 243.

Pileus rather fleshy, conical or convex, then expanded, dry; disc swollen, brown, circumference silky grey; stem stuffed, tough, slender, pulverulent, brick-red; gills free, ventricose, yellow, then olive bay.

On the ground in beech woods. Cabalva.

Pileus about half an inch broad.

Agaricus (Inocybe) lucifugus, Fr. Cabalva.

" " *scabellus*, Fr. Cabalva.

" " *fastigiatus*, Fr. Foxley, Cabalva.

" " *lacerus*, Fr. Cabalva.

" " *pyriodorus*, Fr. Foxley.

" " *dulcamarus*, Pers. Dinmore.

" " *euthelus* B. & Br.

" " *geophyllus*, Fr. Foxley, &c.

Agaricus (Inocybe) asterosporus. *Quel.*

Scarcely distinguishable from *Agaricus rimosus*, except in the form of the spores, which are globose and spinulose, so as to appear stellate (0.12 mm. diam.).—*Quelet in Bull. Soc. Bot. Fr.* xxvi., p. 50.

On the ground in woods. Foxley.

Agaricus (Inocybe) hirsutus. *Laseh.*

Pileus rather fleshy, conic campanulate, acute, squarrose with scales of fasciculate hairs; stem solid, slender, fibrillose, scaly at the apex, greenish at the base; gills adnexed, narrow, pallid then brown.—*Fr. Hym. Eur.*, 227.

In moist beech woods. Foxley.

Agaricus (*Flammula*) *inopus*, *Fr.*

„ (*Crepidotus*) *mollis*, *Fr.*

„ (*Naucoria*) *cucumis*, *Fr.* Holm Lacy.

„ „ *escharodes*, *Fr.* Dinmore.

„ (*Galera*) *hypnorum*, *Batsch.*

„ (*Stropharia*) *æruginosus*, *Curt.*

„ „ *squarrosus*, *Fr.* Foxley.

„ (*Hypholoma*) *epixanthus*, *Fr.* Dinmore.

„ „ *capnoides*, *Fr.* Dinmore.

„ „ *hydrophilus*, *Bull.*

„ (*Psathyra*) *corrugis*, *Fr.* Cabalva.

„ „ *conopileus*, *Fr.* Foxley.

„ (*Panæolus*) *sphinctrinus*, *Fr.* Cabalva.

„ (*Psathyrella*) *disseminatus*, *Fr.* Dinmore.

Coprinus sociatus. *Fr. Hym.*, 331.

Pileus very thin, ovate, then campanulate, soon splitting, with radiating folds, mealy, brown, growing pale; disc umber, at length umbilicate; stem attenuated, smooth, white; gills adnexed to a ring, cinereous, then black.

On damp soil. Cabalva.

Bolbitius titubans, *Fr.* Cabalva.

Cortinarius (*Phlegmacium*) *multiformis*, *Fr.* Cabalva.

„ „ *purpurascens*, *Fr.* Holm Lacy.

Cortinarius (Phlegmaum) largus. *Fr. (fide Quelet).*

Pileus fleshy, dilated, repand, rather thick, coated with adpressed silky fibrils, slightly viscid, flesh bluish grey then white; stem solid, fibrillose, curved, violaceous, becoming whitish, pruinose at the apex; gills adnate, emarginate, broad, crowded, quite entire, bluish grey, then clay-coloured cinnamon.—*Fr. Hym.*, 339; *Grevillea t.* 103, f. 1.

In pine woods.

Cortinarius (Myxacium) Riederi. *Fr. Hym Eur.*, 339.

Pileus compact, campanulate, expanded, even, glutinous, shining when dry; flesh watery; stem solid, clavate, silky with lilac fibrils; gills adnate, rather thick, eroded at the margin, lilac, then cinnamon.

In pine woods.

Cortinarius (*Myxaciium*) *elator*, *Fr.*

„ (*Inoloma*) *pholideus*, *Fr.* Cabalva.

Cortinarius* (*Inoloma*) *penicillatus*. *Fr.

Pileus rather fleshy, convex, umbonate, ferruginous brown, floccose with dense innate scales; stem stuffed, slender, equal, clad with adpressed ferruginous brown scales; gills adnate, seceding, rather crowded, dark brown.—*Fr. Hym.*, 265.

In pine woods. Cabalva.

Stem 2-3 inches long, 2-3 lines thick. Pileus 1 inch or more broad.

Cortinarius (*Dermocybe*) *cinnamomeus*, *Fr.* Cabalva.

Cortinarius* (*Dermocybe*) *miltinus*. *Fr.

Pileus fleshy, thin, convex, cinnamon-bay, soon quite smooth, shining; stem hollow, tough, attenuated equally upwards, cinnamon, with red fibrils; base thickened, white, tomentose; gills adnate, narrow, plane, crowded, ferruginous.—*Fr. Hym.*, 369; *Grevillea t.* 110, *f.* 3.

In woods. Cabalva.

Cortinarius (*Telamonina*) *hinnuleus*, *Fr.* Cabalva.

„ „ *ileopodius*, *Fr.* Cabalva.

Cortinarius* (*Telamonina*) *paleaceus*. *Fr.

Pileus rather membranaceous, conical, then expanded, umbonate, silky with white scales, becoming brown; stem hollow, flexuous, girt with whitish scales like rings, pale brown; gills adnate, crowded, whitish, at length cinnamon.—*Fr. Hym.*, 386; *Grevillea t.* 113, *f.* 5, *t.* 114, *f.* 4. *Cort. acutus*, *Grevillea t.* 84, *f.* 1.

In beech woods. Cabalva.

Cortinarius* (*Telamonina*) *urbicus*. *Fr.

Pileus fleshy, convex plane, smooth, pale clay colour; stem solid, equal, becoming even, peronate, villous above the narrow white ring; gills emarginate, broad, watery ferruginous.—*Fr. Hym. Eur.*, 375; *Grevillea t.* 112, *f.* 1.

In grassy places. Cabalva.

Cortinarius* (*Telemonia*) *scutulatus*. *Fr.

Pileus fleshy, thin, ovate, expanded, obtuse, purplish umber (brick-red), at first whitish, silky about the margin, at length broken up into scales; stem solid, rigid, elongated, somewhat bulbous, dark violet externally and internally, white veil peronate; gills adnate, rather distant, purple.—*Fr. Hym.*, 377; *Grevillea t.* 112, *f.* 2.

In moist woods. Foxley, Cabalva.

Cortinarius (*Hydrocybe*) *decipiens*, *Fr.* Cabalva.

„ „ *leucopus*, *Fr.* Cabalva.

„ „ *obtusius*, *Fr.* Cabalva.

Cortinarius* (*Hydrocybe*) *uraceus*. *Fr.

Pileus fleshy, campanulate, convex, rather swollen, even, smooth, umber (clay-coloured); stem somewhat hollow, soft, equal, firm, fibrillose, striate, brown, then blackish, naked and olive-coloured at

the apex; gills adnate, ventricose, rather distant, bay-brown.—*Fr. Hym.*, 393.

In pine woods. Dinmore.

Cortinarius (Hydrocybe) fasciatus. Fr.

Pileus membranaceous, conical, then expanded, smooth, brownish (pale brick-red, silky), umbo rather thick, acute, turning blackish; stem rather hollow, breaking in a fibrous manner, undulating, smooth, pallid brown; gills adnate, thin, rather distant, cinnamon.—*Fr. Hym.*, 399; *Grevillea t.* 114, f. 5.

In pine woods. Dinmore.

(Concluded in our next.)

ASCI IN A POLYPORUS.

The Rev. M. J. Berkeley explained at the *Conversazione* of the Woolhope Club, at Hereford, the circumstances under which he found the pores of a *Polyporus* fringed at the margin, with asci containing spores. The specimens had been forwarded also to Mr. C. E. Broome, and he confirmed the observation in all essential particulars. The asci were perfectly naked, and there is not the slightest reason for the assumption that they bore any relationship to *Hypomyces*, or even that they were parasitic in any other manner. There was every appearance of their being a development, of an abnormal character, of the *Polyporus* itself. The explanation was offered in the hope of inducing further research in the same direction, so as to obtain some clue to the cause of a phenomenon so unusual and unexpected. See also *Gardener's Chronicle*, for Nov. 16th, 1879.

BRITISH HEPATICÆ.

In order to prevent disappointment, we are requested to intimate that the small work, "British Hepaticæ," by M. C. Cooke, has been advanced in price, and is eightpence—not fourpence, as formerly. It is published by David Bogue, No. 3, St. Martin's Place, Charing Cross.

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Grevillea,

A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY
AND ITS LITERATURE.

RELIQUÆ LIBERTIANÆ.

By THE EDITOR.

The following is an enumeration, with descriptions, of fungi collected and characterized by Madame Libert, now in the Herbarium of the Botanic Gardens at Brussels.

Thelephora ozonoides. *Lib. in Herb.*

On bark of *Fagus*.

This is evidently a *Corticium* allied to *C. byssoideum* Fr., if not the same, but our specimens are without a perfect hymenium.

Corticium typhæ. *Fckl. Hydnum scirpinum, Lib. in Herb.*

On leaves of *Scirpus sylvaticus*.

There are no spines, the hymenium being perfectly smooth and even in our specimens, and hence it is not a *Hydnum*, but exactly the *Corticium* of Fuckel.

Cyphella Libertiana. *Cke. Peziza sp. nov. Lib. in Herb.*

Gregaria, punctiformis, sessilis, alba, villosa, demum applanata margine elevato. Tomentum tenue.

On *Cornus mascula*. Certainly not *Cyphella villosa* P.

Pistillaria ramealis. *Lib. in Herb.*

Carnosa, pusilla, polymorpha, plerumque ramosa, pubescens, alba, c tuberculo sphaeriæforme nigro erumpens, ramis subfastigiatis obtusis. Sporis minutissimis, oblongis.

On bark of *Syringa* and *Rubus Idæus*.

Typhula hirsuta. *Lib. in Herb. (Pistillaria maculicola. Fckl.?)*

"Tenuis, simplex, alba; stipite elongato, hirsuto, cavo; clavula oblonga, subobtusata, glabra."

On fallen leaves of *Pyrus malus*.

Tremella culmorum. *Cke. (Dacrymyces albus, Lib. in Herb.)*

Incrustans, "expansa, tenax, plicato-undulata, alba; floccis assurgentibus, ramosissimis." Basidiis globosis, turbinatisque. Sporis—n. v. ?

On culms of grasses. Summer.

Clearly a *Tremella*, and not a *Dacrymyces* as indicated by M. Libert. Distinct from *Sebacina incrustans*. Tul. although it might consistently be referred to that genus.

Tremella crypta. *Lib. in Herb.*

"Orbicularis, parva, compacta, plicata, rufo-fusca; plicis sublobatis."

On bark.

Very firm and devoid of structure. No definite hymenium seen. Apparently not a true *Tremella*.

Nematelia virescens. *Corda. Tremella genistæ, Lib. in Herb.*

On *Genista scoparia*.

Dacrymyces cerasi. *Lib. in Herb.*

On branches of *Cerasus*.

This is altogether a spurious species. The greater portion consists of cherry gum, which exudes through fissures in the bark. A few threads of mycelium and ordinary mould are enclosed in the gum whilst exuding. In some instances there are small granular bodies still adhering to the bark, but covered by the gum, which are probably small *Dacrymyces fragiformis* Nees. It is the presence of these occasional, and altogether foreign bodies, that has led to an erroneous judgment.

Leptostroma Capreæ. *Lib. in Herb.*

"Sparsum, rotundum, vel ovatum, nigrum, nitidum, pulpa sporulosa alba, sporis ovoideis."

On twigs of *Salix capræa*.

Leptostroma Scorodoniæ. *Lib. in Herb.*

Subrotundum, inæquale, sub-confluens, tenue, læve, nigrum, totum secedens, macula nigra; sporis minutissimis, globosis, hyalinis.

On *Teucrium scorodonia*.

Leptostroma? Poæ. *Lib. in Herb.*

"Simplex, rotundum, læve, planissimum, nigrum, substantia ceracea, fusca, totum secedens. Asci obovatis minutis, fixis, sporidiis globosis, hyalinis."

On *Poa sudetica*.

This is certainly not a *Leptostroma*. There are no asci, but stipitate globose spores.

Leptothyrium Coryli. *Lib. in Herb.*

"Maculis magnis, orbiculatis, fuscis; peritheciis hypogenis, sparsis, minimis, planiusculis, rugosis, nigris, basi circumscissis; pulpa grisea, sporis ovatis, binucleatis, pellucidis."

On leaves of *Corylus* (not examined), most probably the spermogonia of *Gnomonia coryli*.

Septoria pyri. (*Lib.*) *Ascochyta pyri. Lib. in Herb.*

Epiphylla; maculis irregularibus, fusco-dealbatis; peritheciis atris, poro apertis, cirrhis albis, sporis linearibus, curvatis 10-14 nucleatis, pellucidis.

On leaves of *Pyrus sylvestris* (not examined, possibly *S. pyricola* Desm.).

Polystigma luteum. *Lib. in Herb.*

On living leaves of *Pyrus malus* (not examined, but apparently only the spermogonia of *Ræstelia*).

Zythia peltigeræ. *Lib. in Herb.*

Gregaria, mollis, hypophylla, peritheciis globosis, albis; ostiolo fusco aperto, gelatina sporulosa candida; sporis minutissimis, ovato-oblongis.

On *Peltigera polydactyla*.

It is possible that this may have some relationship to the *Nectria* found on the same plant.

Sphæropsis acuarium. *Cke. Sphæria? Lib. in Herb.*

Erumpens, subglobosa, atra, ostiolo perforato, nucleo albo fluxili. Sporis cylindricis, utrinque obtusis, hyalinis (0.15×0.004 mm.)

On fir leaves.

Hendersonia neglecta. *Westdp. Sporocadus arundinis; Lib. in Herb.*

On culms of *Phragmitis*.

Excipula caricum. *Lib. in Herb. Sub. Vermicularia.*

"Sparsa, innata, atra; peritheciis sphæricis, pilis longissimis tectis, pezizoidæo-apertis; sporis fusiformibus, rectis, utrinque attenuatis."

On leaves of *Carices*.

Much smaller than *Dinemasporium graminum*, and the spores do not appear to be aristate. The distinctions between the genera *Excipula* and *Dinemasporium* appear to be too subtle for practical use.

Melanconium secalis. *Lib. in Herb.*

Peritheciis minimis, globosis, nigris, primo tectis, demum fissuratis, sporidiis ovalibus, atris, simplicibus, cirrhatim erumpentibus.

On culms of *Secale cereale*.

SCHIZOTHYRIUM. *Lib.*

Perithecium membranaceum, primo clausum, dein in lacinias a centro versus ambitum dehiscens, a nucleo discretum. Nucleus ceraceus, coloratus. Sporæ septatæ in floccos dichotomos concatenatæ, dein sedcentes. Asci nulli.

Schizothyrium quercinum. *Lib.*

Hypophyllum, innatum, hemisphericum, nigrum, in lacinias 4-6 dehiscens; nucleo luteo, siccitate rubro, sporis cylindricis, utrinque obtusis, hyalinis.

On fallen oak leaves. Summer.

When fully mature and expanded resembling a *Stictis*.

Trichoderma lateritio-roseum. *Lib. in Herb.*

Hemispherico-pulvinatum, confluent, lateritio-roseum, pallescens; sporis pellucidis, minimis, ovalibus. nec Periola. *Fr.*

On rotten potato tubers.

Fusarium violaceum. *Fekl. Selenosporium cæruleum; Lib. in Herb.*

On potato tubers.

Fusarium Brassicæ. *Lib. sub. Selenosporium Brassicæ. Lib. in Herb. Fusarium rhizophylum. Cke. in Herb.*

"Effusum, aurantiacum, basidiis minutis; sporis fusiformibus; curvatis, utrinque acuminatis, 3-7 septatis."

On cabbage stems.

Psilonia rubella. *Lib. in Herb.*

Superficialis, oblonga, confluens, roseo-coccinea, villo in pelliculam albam contexto. Sporis oblongatis.

On leaves of *Carex*, *Scirpus sylvaticus* and on *Juncus conglomeratus*.

Polyscytalum sericeum. (*Rabdosporium griseum*; *Lib. in Herb.*)

On oak leaves.

Fusidium flavo-virens. *Lk.*

On oak leaves.

Dicoccum roseum. *Lib. in Herb.*

Acervuli minuti sub-rotundi, rosei; sporis elongatis, didymis, seu uniseptatis.

On stems of herbs.

Macrosporium Cheiranthi. *Lib. (sub Helminthosporium Cheiranthi.)*

On leaves and pods of *Cheiranthus*.

Scarcely distinct from *Macrosporium commune*. *Rabh.*

Ombrophila Clavus. (*A. & S.*) forma (*Leotia aquatica. Lib. in Herb.*)

A form with a long ventricose, farinose stem, but apparently only a variety.

On submerged wood.

Peziza (Dasyscypha) Secalis. *Lib. in Herb.*

Minuta, sparsa, sessilis, globosa, strigoso-tomentosa, sulphureo-fuscescens, disco roseo. Sporis linearibus, minutis.

On culms of *Secale cereale*.

Similar in many features to *Peziza mutabilis*, B. & Br.

Peziza (Dasyscypha) mollissima. *Lasch. (Peziza ovina. Lib. in Herb.)*

On stems of *Valeriana officinalis*.

Leciographa (?) circinans. *Phillips. (Peziza circinans. Lib. in Herb.)*

On *Peltigera canina*.

This is a Lichen.

Peziza (Mollisia) Senecionis. *C. and Ph. (Peziza sp. nov. Lib. in Herb.)*

On *Senecio sarracenii*.

"*Peziza atratae* proxima a quo præsertim differt margine concolore, et colore fusco," Nees in *Litt.* 10 Feb., 1825.

Peziza (Hymenoscypha) amenti. *Pers. (Peziza amenticola.*

Lib. in Herb.

On catkins of *Salix*.

Peziza (Hymenoscypha) spinosæ. *Lib in Herb.*

Sub *Peziza Pruni-spinosæ*.

Fusca, firmula, in subiculo irregulari nigro innata; cupula orbicularis planiuscula, margine prominente, stipite elongato, ascis tenuissimis, cylindricis. Sporidiis ellipticis, hyalinis 0.05×0.02 mm.

On dead leaves of *Prunus spinosa*.

Helotium epiphyllum. *P. (Peziza nov. sp. Lib. in Herb.)*

On leaves of *Fagus*, &c.

Vibrissea pezizoides. *Lib. in Herb.*

Carnosa, subturbinata, extus umbrina; hymenio dilute flavo, ex paraphysibus longissimis erumpentibus velutino. Ascis tubulosis; sporidiis oblongis hyalinis.

On branches and wood in wet places.

Ascobolus (Ascophanus) carneus. P. (*Peziza chartarum*.
Lib. in Herb).

On paper.

Cenangium Sarothamni. Fekl. (*Cenangium Genistæ*, *Lib. in Herb*)
Sporidia allantoid; $\cdot 009 \times \cdot 002$ mm.

On *Genista scoparia*.

Cenangium vernicosum. Fekl. (*Tympanis Padi*, *Lib. in Herb*).
On branches of *Prunus padus*.

Tympanis populi. *Lib. in Herb*.

Minute spermatia only.

On branches of *Populus fastigiata*.

It is impossible to determine this species satisfactorily from the material before us. This applies also to the next species.

Tympanis pini. *Lib. in Herb*.

Only small elliptical stylospores about $\cdot 007 \times \cdot 003$ mm.

On *Pinus picea*.

Eustegia arundinacea. Fr. (*Peziza phalaridis* *Lib. in Herb*)
On culms of *Phalaris arundinacea*.

Peziza (Mollisia) perpusilla. (*Lib.*) *Stictis perpusilla*, *Lib. in Herb*.

Innato-erumpens, minutissima, hemisphærica, nigra, ore contracto punctiforme, margine albo, integro. Ascis subclavatis. sporidiis allantoides, $\cdot 014 \times \cdot 003$ m.m.

On *Juncus conglomeratus*.

This is rather an erumpent *Peziza* than a *Stictis*, allied to *P. caricina*.

Phacidium Trifolii. *Lib. in Herb*.

This is not *Phacidium Trifolii*, but a smaller species, it may be of *Phacidium Medicaginis*; but as there is no fruit this cannot be affirmed.

On leaves of *Trifolium medium*.

Phacidium Rubi. (*Phacidium* sp. nov. *Lib. in Herb*.)

On *Rubus*.

Hysterium (Lophodermium) ciliatum. *Lib. in Herb*.

Innato-superficiale, aggregatum, rotundatum, vel ellipticum, nigrum, disco lato, fuligineo, apertum, margine ciliis candidas ornato. Ascis clavatis. Sporidiis filiformibus.

On stems of *Epilobium angustifolium*.

Sporomega cladophila (?) (*Hysterium Vaccinii*, *Lib.*)

On *Vaccinium myrtillus*.

The specimens are sterile.

Hysterium conigenum. Fr. ?

On strobiles of *Pinus*.

The specimens are sterile.

Phacidium pinastri. *Lib. in Herb*.

On leaves of *Pinus picea*.

The specimens are sterile.

Nectria lecanodes. Ces. (*Sphæria peltigeræcola*, *Lib. in Herb*)
On *Peltigera*.

We are inclined to believe that *Sphæria sanguineo-punicea*, *Lib.*

in Herb., is an undeveloped condition of the same species. Our specimens are imperfect and sterile.

Gibbera pulicaris. Fr. (*Sphæria cærulea*, Lib. in Herb.)

On stems of *Brassicæ oleracea*.

Our specimens are sterile.

Gibbera pulicaris. (*Sphæria populicola*, Lib. in Herb.)

On branches of Poplar.

Also the same species, mostly stylosporous, but with a few asci, which are scarce mature.

Valsa leucostoma. P. var. **Juniperina** *Sphæria* sp. nov. Lib. in Herb.

Hardly distinct from *V. leucostoma*. Disc white.

On branches of *Juniperus*.

Melanconis modonia. Tul. (stylospores). *Stegonosporium Castaneæ*, Lib. in Herb.

On bark of *Castanea*. Autumn.

Melanconis macrospora. Tul. (stylospores). *Coryneum macrospora*, Berk. *Scolicosporium Fagi*, Lib. in Herb.

On bark of *Fagus*.

Melanconis chrysostroma. Tul. *Didymosporium deplanatum*, Lib. in Herb.

On branches of *Carpinus*.

The yellow stroma is not recognizable in the dried specimens, but habit and fructification are identical. Madame Libert apparently overlooked the asci, which are nevertheless present.

Massaria loricata. Tul. (stylospores). *Melanconium Fagi*, Lib. in Herb.

On bark of *Fagus*.

Diaporthe occulta. Nitschke. *Sphæria strobilicola*, Lib. in Herb.

On scales of cones of *Pinus abies*.

Melogramma homaleum. Fr. proxima. *Sphæria* sp. nov., Lib. in Herb. Sporidiis elliptico-elongatis, triseptatis, fuscis.

On branches of *Acer pseudoplatanus*.

Dothiora sphæroides. Fr. *Dothichiza sphæroides*, Lib. in Herb.

On bark. With perfect asci, and mature sporidia.

Dothiora pyrenophora. Fr. *Dothichiza Sorbi*, Lib. in Herb.

On *Sorbus aucuparia*.

These specimens will prove that Fuckel was correct in removing *Dothiora* to Ascomycetes.

Dothiora pinastri. (Lib.). *Dothichiza pinastri*, Lib. in Herb.

On bark of firs.

Lasiosphæria ovina. Pers. *Sphæria* species novæ, Lib. in Herb.

On *Phalaris arundinacea*.

Lasiosphæria macrotricha. (B. & Br.). *Sphæria* sp.

On *Rubus Idæus*.

Also on fir leaves.

The latter greatly resembles in habit and external features a species from North America, of which the following is the diagnosis.

Lasiosphæria acicola. *Cooke.*

Peritheciis subglobosis, papillatis, superne glabris, atro-brunneis, in bysso effuso, intricato nidulantibus. Ascis cylindraceis. Sporidiis uniseriatis ellipticis, utrinque subattenuatis, uniseptatis, leniter constrictis, brunneis (0.028×0.01 mm.).

On pine leaves. Rocky Mountains. (Dr. Lyall in Herb., Kew.).

The dense brown byssus unites the mass of leaves into a compact crust, in which the perithecia are semi-immersed. The lower portion of the perithecia alone are woolly, the upper and exposed portion being quite smooth.

Sphæria vacciniicola. *Lib. in Herb.*

Sparsa, peritheciis immersis, globosis, nigris, ostiolo minutissimo areola albicante cincto, nucleo gelatinoso livido. Ascis linearibus. Sporidiis ellipticis, subnaviculoideis hyalinis.

On dead leaves of *Vaccinium Vitis Idæa*.

This is the *Physalospora claraebonæ*, "Speg. Dec. Ital.," No. 88.

Venturia ilicicola. *Cke. in Hdbk.*

Sphæria conoplea, *Lib. in Herb.* var. β . *ilicinola*, *Lib.*

On Holly leaves.

Venturia conoplea. *Lib. in Herb.* Sub *Sphæria*.

"Peritheciis minimis, globosis, superficialibus, arcte collabentibus, atris; pilis erecto-divergentibus obsitis. Ascis brevibus, subfusiformibus." Sporidiis arcte ellipticis, hyalinis, uniseptatis.

On pine leaves.

Hairs of perithecia shorter than in *V. ilicicola*. Perithecia subgregarious (0.13 mm.). Sporidia 0.006×0.002 mm.

Perisporium Rubi. *Lib. in Herb.*

Superficiale, innatum, gregarium, globosum, nitidum, atrum, poro pertusum. Sporidiis concatenatis cylindricis.

On branches of *Rubus*.

No fruit found by us, hence it is doubtful whether it is not rather a *Leptostroma*, or some allied genus.

Eurotium album. *Lib. in Herb.*

Peridiis membranaceis, albis, irregulariter ruptis; floccis tenerimis ramosis, demum evanescentibus albis. Sporis globosis, concoloribus primum concatenatis, dein liberis.

On dead leaves, &c.

Certainly not an *Eurotium*.

Sclerotium Convallariæ. *Lib.*

Sclerotium inconspicuum. *Lib.*

Xylostroma, *sp. Lib.*

} Wholly incomplete fungi.

NOTE.—The above was already in type when we received 'Revue Mycologique,' in which, under the same title, this collection is enumerated.

THE SUB-GENUS CONIOPHORA.

By M. C. COOKE.

In a former communication some observations were made on the advantages which would accrue from a revision of the large genus *Corticium*. Many species were then removed to the new genus *Peniophora*. Further study of the species referred to this genus, especially by the aid of the microscope, has led to a scheme for re-arrangement of the sub-genus *Coniophora*, Fr. ("Hym. Eur.," p. 657).

This sub-genus was certainly admitted by Fries, from Persoon, for the reception of species having a pulverulent hymenium, of which his *Thelephora puteana* was to be the type. Evidently he was under the impression that the *Coniophora membranacea*, DC., was a sterile condition of *Merulius lacrymans*, to which also the figure of Sowerby (t. 214) was referable. Having received from Simla (India) a specimen, taken from the wall of the gaol, which reminded us so strongly of Sowerby's figure, and which also might have passed for a sterile condition of a *Merulius*, we examined it and found the coloured elliptical spores most profuse. These agreed again with a specimen under the name of *Coniophora membranacea*, DC., in "Herb. Limminghe." From a careful perusal we feel satisfied that this is Persoon's plant, and, certainly, that it is the *Auricularia membranacea*, Sowerby, and is a most characteristic species.

Accepting, then, *Thelephora puteana*, Fr., and *Coniophora membranacea*, Pers., as typical of the sub-genus *Coniophora*, with a pulverulent hymenium, caused by the profusion of large coloured spores which are produced, we have appended a list of such species as we have been able to examine, forming a most natural division, and one which will greatly aid in the determination of species, so closely, almost *too* closely in some instances, allied to each other.

Some of the species included by Fries under this division in "Hym. Eur.," we have never seen, others, which we have examined, do not fulfil the conditions indicated.

Sub-genus. **CONIOPHORA.** Pers.

Hymenium pulverulent; spores large, profuse, coloured.

1. **Corticium (Coniophora) puteanum.** Schum. Fr. Hym. Eur., 657.
On the faith of specimens from Fries.

On wood, &c.

Europe.

Professor Saccardo writes of a form with much smaller spores, but the specimen in my copy of *Fungi veneti*, No. 799, has no spores.

2. **Corticium (Coniophora) brunneolum.** B. & C. North American Fungi, No. 285.

From specimen in the Berkeley Herbarium.

On wood.

U. States.

3. **Corticium (Coniophora) Ellisi.** (*B. & Cke.*) *Hymenochæte Ellisii*.
Berk. & Cke. Berk in North American Fungi, No. 1005.
Basidia very distinct. Certainly not a species of *Hymenochæte*. Spores narrowly elliptical, brown.
On wood. U. States.
4. **Corticium (Coniophora) leucothrix.** *B. & C.* North American Fungi, No. 284.
From an authentic specimen.
On pine wood. U. States.
5. **Corticium (Coniophora) aridum.** *Fr. Hym. Eur.*, p. 659.
From an authentic specimen from Fries.
On pine wood. Europe.
6. **Corticium (Coniophora) fuscum.** *Fr. Hym. Eur.*, p. 651.
This is included on the faith of a very uncertain specimen.
On *Salix*. Europe.
7. **Corticium (Coniophora) luteo-cinctum.** *B. Thelephora luteo-cincta.* Berk. Linn. Journ., xiii., p. 168.
From specimen in Herb. Berkeley.
On the ground. Australia.
8. **Corticium (Coniophora) submembranaceum.** *B. & Br. Thelephora submembranacea,* Berk. & Br. Fungi, Ceylon, No. 584.
From specimen in Herb. Berkeley.
On bark (?). Ceylon.
9. **Corticium (Coniophora) viride.** *Berk. Thelephora viridis.* Berk.
Spores nearly globose, smooth, brown.
Specimen in Berkeley Herbarium.
On branches. New Zealand.
10. **Corticium (Coniophora) pulverulentum.** *Lev. Thelephora pulverulenta.* Lev. Ann. Sci. Nat., 1846, v. 149.
Specimen in Berkeley Herbarium.
On trunks. Natal.
11. **Corticium (Coniophora) olivaceum.** *Fr. Hym. Eur.*, p. 660.
On the faith of original specimen from Fries.
On pine wood. Europe.
12. **Corticium (Coniophora) membranaceum.** *Pers. Myc. Eur.*, I., 153. DC. *Fl. Fr.*, 634. *Auricularia pulverulenta.* Sow., t. 214.
From specimen in Herb. Limminghe.
On walls, paper, &c. Europe, India.
13. **Corticium (Coniophora) fusisporum.** *Cke. & Ellis* in Grevillea.
A most distinct species, with elongated fusiform spores.
Overrunning wood, &c. U. States.

Subsequently we hope to furnish a revised catalogue of the species of *Hymenochæte*, and also of the resupinate species of genuine *Thelephora*. These have all been very much mixed up, and are confused, through inattention to their microscopical characters.

DIATOMACEÆ OF KERGUELEN'S LAND.

Algæ aquæ dulcis Insulæ Kerguelensis, auctore P. F. Reinsch, cum notulis de distributione geographica a G. Dickie, adjectis. ("Trans. Roy. Soc.," vol. 168 pp. 66-69).

Diatomaceæ.

Stauroneis gæppertiana ? = *S. dilatata*.

„ *anceps*.

„ *Phænicenteron*.

Achnanthes exilis.

Surirella diaphana ? = *Surirella splendida*.

Campylodiscus.—Species nova (Reinsch., in "Journ. Linn. Soc.," xv., 205), magnus elliptico-ovalis, utroque polo rotundato-obtusos, costis marginalibus radialibus, crassus, crassis usque ad tertiam partem latitudinis superficies se pertinentibus in quoque latere 22is-24is, areolas 21as-22as, rectangulare includentibus, area media lævi; frustulæ visæ simpliciter spiraliter curvatæ, areolis 21is-22is, rectangularibus instructæ. Diam. longit. .132mm.; diam. transver., .0666mm. Costæ, m. .02mm. tres.

In speciminibus singulis, inter *Schizosiphontes kerguelensis* cæspites.

A. Campylodiscis frustulis oblongis. *Campylod. Surirella*, Eh., mihi tantum, ex diagnosi, nota proxima species videtur. *Gomphonema Brebissonii*.

Amphiprora.—Spec. nov. (Reinsch., in "Journ. Linn. Soc." xv., 205), parva rectangularis, subtilissime, striata, medio parum, constricta, utroque polo late, truncato rotundato, lineis intermediis, duabus in medio cellulæ, æqualiter, extrorsum curvatus, aream mediam, cruciformem, lævem circumcingitibus, nodulo singulo et in quoque latere cellulæ in decussi linearum, incluso et in summo, utriusque lineæ. Longit., .0333mm.

Amp. Porkornyana, Grunow.

Navicula elliptica, Kutz.; var. *cocconeoides*.

„ *dicephala*, Ehr.

„ *minutissima*, Grunow.—Non sine dubio *N. kerguelensis* ad hanc speciem est positus.

Navicula.—spec. Cellulis lanceolatis, apicibus capituliformibus porrectis, nodulo centrale et linea media indistincta, marginibus distincte striatis, striis ad mediam non pertinentibus. Longit., .0278mm.; latit., .0056mm.

Amphora gracilis, Ehr.

Pinnularia viridula, W. Sm.

„ *viridis*, Ehr.

Pinnulariæ.—species. Cellulis ovato-ellipticis, polis rotundatis, nodulo centrali, firmo, striis, transversalibus, distinctis, lineam

mediam attingentibus. Longit., ·0168mm.-·196mm.; latit., ·0084mm.

Pinnulariæ.—species. Cellulis, late ovato-ellipticis, polis subito, angustatis, apicibus, rotundatis, nodulo centrali firmo, striis transversalibus distinctis, lineam mediam attingentibus. Longit., ·0224mm.; longit., ·0111.

Synedra Vaucheriæ, Kützing.

Eunotia pectinalis, Dillwyn.

Denticula thermalis, Kütz, var. *minor*.—Longit., ·0168 mm.; latit., ·0056 mm.

Cymbella gastroides, Ehr.

The above list of Diatoms is extracted from T. F. Reinsch's Catalogue of Freshwater Algæ, collected by the Rev. A. E. Eaton in Kerguelen's Island. It is much to be regretted that this portion had not been more carefully revised. There are more errors in it than would be found in double the number of pages in any cheap scientific periodical, as the following *errata* will prove:—

Aclianthes instead of *Achnanthes*.

Larilella and *Lurilella* instead of *Surirella*.

Amphiprora Pockorngana instead of *Porkornyana*.

The omission of specific names when new species are described is a source of much inconvenience to other observers, particularly in labelling slides, and is a worse practice than using the names of individuals for specific distinctions.

F. KITTON, Hon., F.R.M.S.

PREPARATIONS OF ALGÆ.

A series of microscopical slides, illustrating the principal genera of British Freshwater Algæ, has been prepared by Messrs. Joshua and Holmes, of which we give a list. Such a collection must prove most valuable to a student, and far superior to the most elaborate figures, in giving accurate notions of the characteristics of genera and families.

1. *Licmophora splendida*, Grev.
2. *Isthmia nervosa*, Kütz.
3. *Aphanocapsa virescens*, Rab.
4. *Oscillaria limosa*, Ag.
5. „ *muscorum*, Ag.
6. *Nostoc commune*, Vauch.
7. „ *granulare*, Kütz.
8. „ *rupestre*, Kütz.
9. *Cylindrospermum macrospermum*, Kütz.

10. *Gloietrichia gigantea*, *Rab.*
11. *Scytonema myochrous*, *Ag.*
12. *Sirosiphon Bouteillei*, *Breb. & Desm.*
13. *Glæocystis vesiculosa*, *Naeg.*
14. *Palmella mucosa*, *Ktz.*
15. „ *botryoides*, *Ktz.*
16. *Apiocystis Brauniana*, *Naeg.*
17. *Volvox globator*, *L.*
18. *Protococcus viridis*, *Ag.*
19. *Hydrodictyon utriculatum*, *Roth.*
20. *Penium oblongum*, *De Bary.*
21. *Closterium acerosum*, *Ralfs.*
22. *Pleurotænium baculum*, *Breb.*
23. *Cosmarium cucumis*, *Roth.*
24. *Euastrum oblongum*, *Ralfs.*
25. *Micrasterias rotata*, *Ralfs.*
26. *Staurostrum cuspidatum*, *Ralfs.*
27. *Zygnema nitidum*, *Hass.*
28. *Zygogonium ericetorum*, *Ktz.*
29. *Mesocarpus ovalis*, *Hass.*
30. *Pleurocarpus mirabilis*, *A. Braun.*
31. *Hydrogastrum granulatum*, *L.*
32. *Vaucheria terrestris*, *Hass.*
33. *Prasiola crispa*, *Ktz.*
34. *Sphæroplea annulina*, *Ag.*
35. *Cladophora glomerata*, *L.*
36. *Bulbochæte setigera* (*Roth*), *Ag.*
37. *Cedogonium Boscii*, *Breb.*
38. *Ulothrix tenerrima*, *Ktz.*
39. *Schizogonium murale*, *Ktz.*
40. *Chroolepus aureus* (*L.*), *Ktz.*
41. *Chætophora endivæfolia* (*Roth*), *Ag.*
42. „ *radians*, *Ktz.*
43. *Coleochæte scutata*, *Breb.*
44. *Draparnaldia glomerata* (*Vauch*), *Ag.*
45. *Porphyridium cruentum*, *Naeg.*
46. *Chantransia Hermannii* (*Roth*), *Desm.*
47. *Batrachospermum moniliforme*, *Hass.*
48. *Lemania torulosa* (*Roth*), *Ag.*

For information concerning them, apply to W. Joshua, Esq., F.L.S., Cirencester.

Apropos of this subject, the Editor of this Journal would be thankful for lists of British Freshwater Algæ (exclusive of Diatomaceæ) in order to their incorporation in a work now in preparation; in which geographical distribution is desirable to be recorded.

FUNGI OF INDIA.

By M. C. COOKE.

The following is an enumeration of Fungi from British India, of which the majority were communicated by Colonel Julian Hobson :—

Corticium (Coniophora) membranaceum. *D.C.*

Spores brown, large, profuse.

On walls of gaol, Simla (Prof. Balfour.)

Leptostroma leguminum. *Cke.*

Punctiformis, sparsa, sub-epidermide nidulans, brunnea, superne porosa. Sporis ovoideis, hyalinis ($\cdot 005 \times \cdot 003$ mm.).

On legumes of *Clitorea*. Madras.

Phoma Rheeae. *Cke.*

Sparsa, parvula. Peritheciis globoso-compressis, tectis; sporis ellipsoideis, utrinque nucleatis ($\cdot 01 \times \cdot 003$ mm.).

On stems of *Bahmeria nivea*. Assam.

Sphæropsis absus. *Cke.*

Sparsum, erumpens. Peritheciis sub-globosis, atris, demum apice prominulis, Sporis late ellipticis, demum brunneis ($\cdot 02 \times \cdot 012$ mm.).

On twigs of *Cassia absus*. Madras.

Sphæropsis cassiæcarpum. *Cke.*

Punctiforme, sparsum. Peritheciis depressis, atris, poro pertusis. Sporis cylindricis, utrinque rotundatis, hyalinis ($\cdot 025\text{--}\cdot 03 \times \cdot 006$ mm.).

On legumes of *Cassia absus* and *Clitorea*. Madras.

Sphæropsis Clitoreæcarpum. *Cke.*

Sparsum, punctiforme. Peritheciis atris, subglobosis, primo tectis, demum erumpentibus. Sporis late ellipticis, hyalinis, ($\cdot 02\text{--}\cdot 025 \times \cdot 012\text{--}\cdot 014$ mm.).

On legumes of *Clitorea*. Madras (Dr. Bidie).

Sphæropsis ? musarum. *Cke.*

Peritheciis semi-immersis, atris, nitidis, subconicis, in maculis parvulis congestis. Sporis subglobosis, vel ovatis, vel ellipticis, hyalinis ($\cdot 012\text{--}\cdot 022 \times \cdot 01\text{--}\cdot 014$ mm.).

On *Musa paradisiaca*. Belgaum (Col. Jul. Hobson, 230).

The mode of development of the spores in the perithecia is uncertain, no pedicels could be traced, and the spores have the appearance of being differentiated by division.

Diplodia hypoxylodea. *Cke.*

Cæspitosa, erumpens. Peritheciis atris, papillatis, in pulvinulis convexis congestis, stromate diatrypodeo. Sporis ellipticis, atro-brunneis, uniseptatis, leniter constrictis ($\cdot 018\text{--}\cdot 02 \times \cdot 008$ mm.).

On bark of root of *Moringa*. Bengal.

Diplodia Rheeae. Cke.

Sparsa, erumpens. Peritheciis atris, globosis, subpapillatis. Sporis ellipticis, fuliginosis, demum uniseptatis ($\cdot 02 \times \cdot 008$ mm.).

On stems of *Bahmeria nivea*. Assam.

Septoria alliacea. Cke.

Sparsa, punctiformis. Peritheciis immersis, tectis, vix distinctis. Sporis filiformibus, flexuosis ($\cdot 05$ - $\cdot 06$ mm. long).

On leaves of some alliaceous plant. Belgaum (Col. Jul. Hobson, 281).

Septoria arcuata. Cke.

Epiphylla. Maculis albidis, orbicularibus, purpureo-cinctis. Peritheciis minimis, immersis, ostiolo papillato, exserto. Sporis linearibus, arcuato-curvatis, multi-nucleatis ($\cdot 04$ - $\cdot 05$ mm. long).

On leaves of *Ficus*. Belgaum (Col. Jul. Hobson, 18).

Phyllosticta cocos. Cke.

Maculis pallidis, irregularibus, subellipticis, brunneo-cinctis. Peritheciis punctiformibus, atris. Sporis arcte ellipticis ($\cdot 008 \times \cdot 003$ mm.).

On leaves of *Cocos nucifera*. Belgaum (Col. Jul. Hobson, 240).

Uredo Balsaminæ. Cke.

Hypophyllis. Sporis sparsis, oblongis, aurantiacis, epidermide hyalino cinctis. Sporis ellipticis, asperulis ($\cdot 025$ - $\cdot 03 \times \cdot 015$ mm.) aureis.

On *Impatiens rosmarini folia*. Ceylon (D. Morris).

It has all the habit and appearance of a *Coleosporium*, but whether so or not could not be determined from the specimen, as all the spores had become free.

Triphragmium Acaciæ. Cke.

Amphigenum. Soris brunneis, mediis, sparsis. Pseudo-sporis ovatis, tricellulosis ($\cdot 05$ - $\cdot 06 \times \cdot 035$ - $\cdot 04$ mm.), atrobrunneis. Episporio hyalino-spiculatis. Aculeis supra obtusis. Stipite hyalino, infra attenuato. Protosporis subglobosis fuscis ($\cdot 023$ - $\cdot 028 \times \cdot 02$ mm.), laevibus.

On leaves of *Acacia*. Belgaum (Col. Jul. Hobson, 17-18).

Trichobasis sp., on leaves of unknown tree. No. 189. Belgaum.

Puccinia sp., on leaves of unknown tree. No. 323. Belgaum.

Melampsora sp., on unknown plant. No. 302. Belgaum.

These cannot be determined more definitely. It is useless to give names to species of *Puccinia* or *Trichobasis* of which the host is unknown.

There is a very curious epiphyte on leaves, No. 215 Belgaum, which seems to form the type of a new genus, but it could scarcely be described without some knowledge of its host.

Oidium carneum. Cke.

Effusum, carneum, farinaceum. Hyphis repentibus, tenuibus, septatis, ramosis; ramulis assurgentibus, sporis ellipticis, truncatis, concatenatis ($\cdot 02 \times \cdot 015$ mm.), carnis gerentibus, episporio granulato.

On leaves of *Malvaceæ*, &c. Belgaum (Col. Jul. Hobson, 212-320).

***Sterigmatocystis ferruginea.* Cke.**

Effusa, lanosa, ferruginea. Hyphis erectis, hyalinis, septatis, supra globoso-capitatis. Sporis globosis, ferrugineis, asperulis, ($\cdot 01$ mm. diam.).

On pupa of *Eria* silk moth. Cachar (F. Moore).

Each of the wedge-shaped processes which radiate from the globose head bears two or three elliptical cells, packed side by side, each surmounted by three or four papillæ, each of which bears a spore.

***Cercospora Caladii.* Cke.**

Maculis orbicularibus, fuscis. Hyphis paucis, rectis, simplicibus, in cæspitulis minimis collectis. Sporis subcylindricis, supra attenuatis, hyalinis, 5-7 septatis ($\cdot 06$ - $\cdot 09 \times \cdot 003$ mm.).

On fading leaves of *Caladium*. Belgaum (Col. Julian Hobson).

The upper third part of the spore without septa.

***Cercospora annulata.* Cke.**

Amphigena. Maculis orbicularibus, pallidis, concentrico zonatis. Sporis subcylindricis, tennibus, vix distincte septatis, sparsis, ($\cdot 06$ mm. long) hyphis repentibus.

On leaves of *Ficus hispida*. Calcutta (Dr. J. Scott).

Spores very diffuent, so that it is difficult even to determine the genus. It appears to be extremely common on leaves of *Ficus*, destroying the foliage.

***Cladosporium herbarum.* Link.**

On leaves and legumes of *Acacia*. Belgaum (Col. Jul. Hobson, 185-241).

***Cladosporium delicatulum.* Cke.**

On dead leaves. Belgaum (Col. Jul. Hobson, 23-239).

***Ailographium cæspitosum.* Cke.**

Maculæforme, epiphyllum. Peritheciis elongato-ellipticis, rectis, vel subcurvulis ($\cdot 4 \times \cdot 2$ mm.) atris, lævibus, in mycelio radiato, brunneo, gregariis; labiis rigentibus. Ascis clavatis, sporidiis arete ellipticis, uniseptatis, fuscis ($\cdot 015 \times \cdot 005$ mm.).

On coriaceous leaves. Belgaum (Col. Jul. Hobson, 307).

Forming little clusters seated on a brown radiating mycelium, after the manner of *Asterina*.

***Dothidea repens.* Corda.**

On leaves of *Ficus religiosa*. Belgaum (Col. Jul. Hobson, 228).

***Dothidea annulata.* Cke. pro. tem.**

A curious species, with the perithecia forming little rings, but entirely sterile.

On leaves of unknown tree, Belgaum, No. 274 (Col. Jul. Hobson).

***Asterina congesta.* Cke.**

Epiphylla. Peritheciis discoideis, atro-brunneis ($\cdot 1$ - $\cdot 15$ mm.), fissurato-dehiscentibus, densissime congestis. Mycelio tenui,

brunneo, sparso. Ascis ovatis. Sporidiis ellipticis, brunneis, medio hyalino-cinctis, demum uniseptatis ($\cdot 02 \times \cdot 01$ mm).

On leaves of *Santulum album*. Belgaum (Col. Jul. Hobson, 208).

There is also from Belgaum an immature *Asterina* on leaves of *Nerium*.

***Asterina carbonacea.* Cke.**

Maculaeformis. Peritheciis applanatis, discoideis, opacis, atris, gregariis ($\cdot 15$ mm. diam.) hyphis paucis, radiantibus. Sporidis ellipticis, uniseptatis, medio constrictis, atro-brunneis ($\cdot 05\text{--}\cdot 045 \times \cdot 02$ mm.).

On coriaceous leaves. Belgaum (Col. Jul. Hobson, 244).

The perithecia are much more carbonaceous than usual in this genus.

***Capnodium lanosum.* Cke.**

Late effusum, lanosum, atro-brunneum. Peritheciis simplicibus, vel ramosis, attenuatis, hinc illic caespitoso-fasciculatis. Sporidiis ellipticis, uniseptatis, hyalinis ($\cdot 016\text{--}\cdot 018$ and $\cdot 008$ mm.). Hyphis ramosis, densissime intertextis, moniliformibus.

On leaves of *Ficus*, Belgaum. (Col. Jul. Hobson, 235-317).

The lower cell of the sporidia usually the narrowest. Perithecia about $\cdot 3\text{--}\cdot 35$ mm. long.

***Capnodium Eugeniarum.* Cke.**

Effusum, fuliginoso-atrum, subpelliculosum. Peritheciis simplicibus, ventricosis, sub-rectis, in subiculo membranaceo hinc illic pelliculoso insidentibus. (Sporidiis ignotis.)

On leaves of *Jumbosa vulgaris*. Belgaum (Col. Jul. Hobson, 201).

The perithecia do not exceed $\cdot 15$ mm. in length, often less, obovate when young.

The following species also from Belgaum, communicated by Col. Julian Hobson:—

Cyathus limbatus. Fr. No. 1.

Calocera viscosa. Fr. No. 2.

Xylaria scopiformis. Mont. Sterile. No. 3.

Peziza epispartica. B. & Br. No. 4.

Hirneola blepharistoma. B. & C. No. 5.

Xylaria aristata. Mont. No. 6.

Xylaria escharoidea. B. Without number.

Microthyrium microscopicum. Desm. No. 190.

Uromyces Amygdali. C. No. 193.

Puccinia purpurea. C. No. 222.

Trichobasis exasperata. C. No. 212, 277.

Graphiola phoenicis. Poit. No. 237, 298.

Meliola amphitricha. Fr. No. 255.

Meliola ziczac. B. & Br. No. 267, 268, 290.

Ravenelia aculeifera. B. No. 269.

Two or three *Agarics* also await further information.

NEW AND RARE BRITISH FUNGI.

By W. PHILLIPS, F.L.S., and CHARLES B. PLOWRIGHT.

WITH PLATE 130.

*(Continued from Vol. vi., p. 29).***111. Agaricus (Clitocybe) ditopus.** *Fr. Hymen., p. 104.*

Odour strong, pileus somewhat fleshy, convex, becoming plane, depressed, smooth, glabrous, hygrophaneous; stem hollow, equal, nearly naked; gills adnate, crowded, thin, darkly ash-grey.

Having the stature of *A. metachrous*, but with a strong odour of new meal.

On dead leaves. Tibberton Firs, Salop. Oct. Rev. W. Houghton.

112. Agaricus (Pholiota) Ægerita. *Fr. Hymeno., p. 219. Brigant. t. 32, 33, f. 1-4.*

Pileus fleshy, convex, then plane, rivulose, rugulose, fulvous, becoming pallid towards the margin; stem stuffed, equal, white, silky, fibrillose, ring high up and tumid; gills adnate, decurrent with a little tooth, pallid then brown.

Flesh white, odour pleasant.

On a dead elm tree. South Wootton. August, 1879.

113. Agaricus (Hebeloma) petiginosus. *Fr. Hymen., p. 243.*

Pileus somewhat fleshy, from conical-convex becoming expanded, dry, the disc gibbos, fuscous, with a hoary silkiness at the circumference; stem stuffed, firm, slender, powdery, brick-red; gills free, ventricose, from yellow becoming olive-brown.

Kings Lynn.

114. Coprinus narcoticus. *Fr. Hymen., p. 329.*

Fetid, pileus very slender, from clavate becoming expanded, albo-villose, with recurved floccose scales, then naked, striate, hyaline; stem fragile, white, woolly, becoming glabrous; gills, free, reaching the stem, white then black.

On a manure heap. Oct. Shrewsbury.

The odour of this species is similar to that of *Hygrophorous foetens*, Phil.

115. Cortinarius (Myxaciium) delibutus. *Fr. Hymeno., p. 357.*

Pileus fleshy, thin, convexo-plane, smooth, obtuse; stem smooth, stuffed, elastic, slender, attenuated, whitish-glutinous; gills adnate, rather distant, serrated, from pallid blue becoming clay-red colour.

Stem 2-4 inches long and 1-4 lines thick, shining, becoming hollow at the apex.

Kings Lynn. Oct., 1879.

116. Cortinarius (Telamonia) flexipes. *Fr. Hymeno., p. 384*

Pileus rather fleshy, conical, then expanded, acutely umbonate, from violaceous becoming brownish cinnamon (clay-brown), hoary fibrillose; stem slender, stuffed, flexuous, sub-undulate, with fibril-

lose squamules, violet at the apex, veil white, sub-annulate; gills adnate, broad, somewhat distant, brown-violet, then cinnamon.

Forres. Rev. J. Keith.

- * **Lactarius mammosus.** *Fr. Hymeno.*, p. 434.

Holme Lacy. 1879.

- * **Lactarius picinus.** *Fr. Hymeno.*, p. 435.

117. **Lactarius lilacinus, Lasch.** *Fr. Hymeno.*, p. 435.

Pileus fleshy, thin, convex, then depressed, papillate, dry, floccose, granulose, zoneless, lilac-rosy; stem stuffed, then hollow, mealy-white, pallid; gills adnate, rather distant, pale-flesh colour; milk acrid, white.

Fragile, copiously milky, pileus 2in. broad, becoming pale.—Fr. Hawthornden, near Edinburgh.

118. **Lactarius ichoratus.** *Fr. Hymeno.*, p. 436.

Pileus fleshy, thin, from rigid becoming soft, plano-depressed, unequal, smooth, glabrous, opaque, fulvous; gills adnate, somewhat crowded, from white becoming ochraceous; milk sweet, white.

Hereford. Oct., 1879.

119. **Hydnum scabrosum.** *Fr. Hymeno.*, p. 599.

Pileus compactly fleshy, at first turbinate, then plane, ferruginous-umber, at first tomentose then scabrous with flocci fasciculated into crowded minute squamules; stem short, punctate with decurrent spines, cinerascens; spines greyish-brown, white at the apices.

On the earth in pine forests. Forres. Rev. J. Keith. Sept., 1879.

The blackish base to the stem is a striking character in this species.

- * **Sistotrema confluens.** *Pers.*

This rare fungus occurred in three localities near Forres this year—Altyre Woods, Chapelton Wood, and Rothiemurchus, in September.

120. **Clavaria incarnata.** *Weinm. Fries Hymeno.*, p. 678.

Gregarious, simple, solid, cylindrical, flesh-colour, whitish-pruinose, purple within.

Varies from $\frac{1}{2}$ –1 $\frac{1}{2}$ inch long.—Fr.

Terrington, Norfolk. Oct., 1879.

121. **Ræstelia carpophila.** *Bagnis. in Thumen Mycotheca Universalis.* No. 1326.

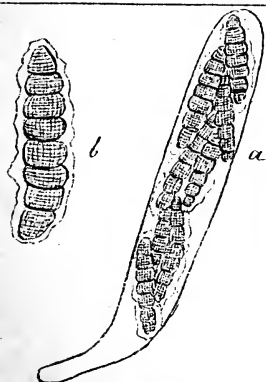
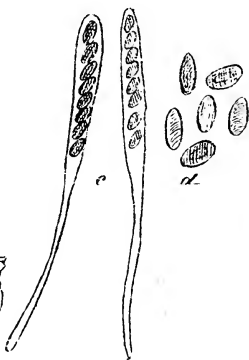
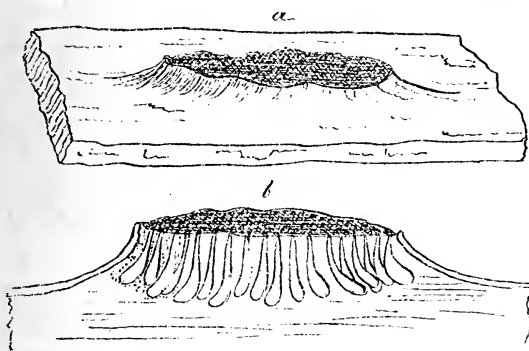
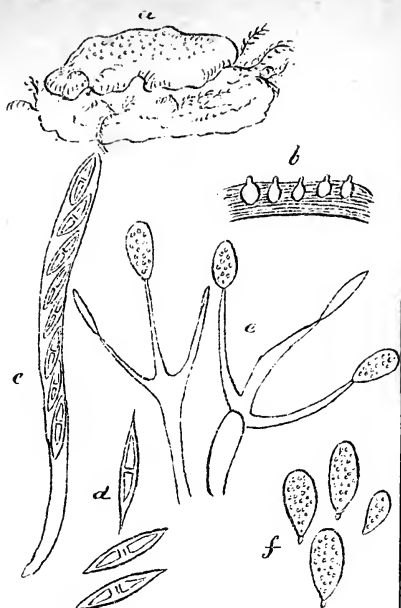
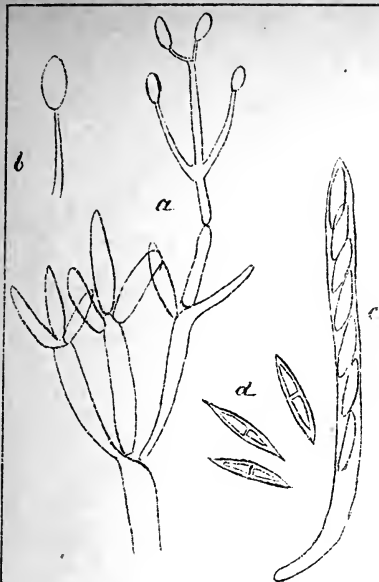
On the fruit of the common hawthorn.

August, 1879. Kings Lynn.

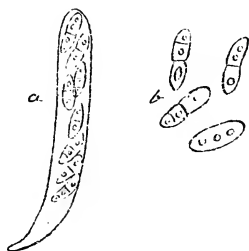
Although careful search was made, not a single specimen of the common form—*R. lacerata*—was observed. In the affected fruit the petals were still white and adherent, though they had all been shed for some time on the rest of the tree.

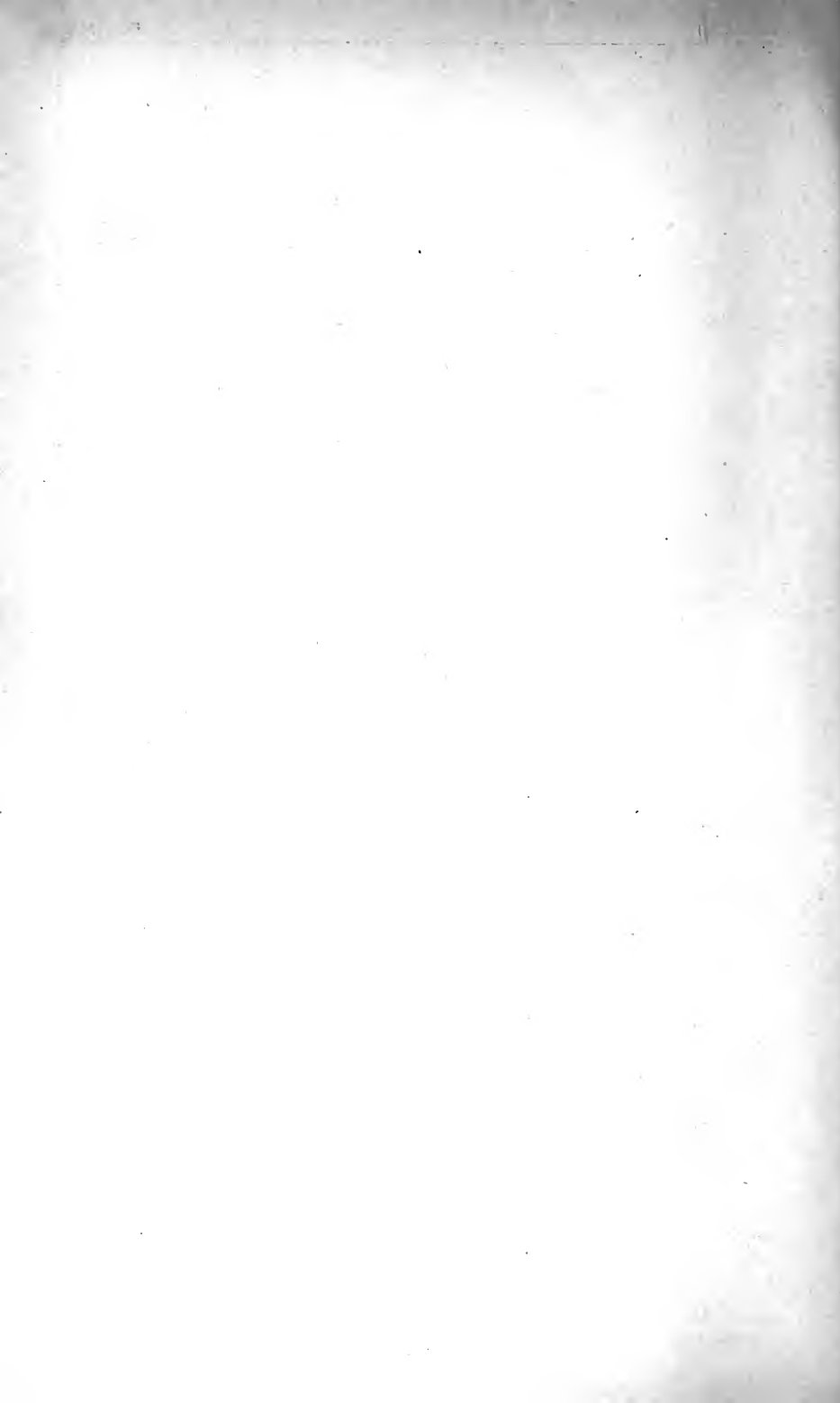
122. **Morchella gigas.** *Pers. Cooke's Mycogr.*, t. 86, f. 323.

Pileus conical, margin free, somewhat undulated, brown, ribs forming perpendicularly elongated cells, anastomosing; stem squamulose, hollow, enlarged near the base; asci cylindrical;



IV





sporidia ovate, slightly coloured, smooth, $\cdot 025\text{--}\cdot 027 \times \cdot 013\text{--}\cdot 016$ mm.; paraphyses stout, clavate at the apices, septate.

North Wootton. May, 1879.

Some of the specimens were 30 cm. (12 inches) in height. A very fragile species.

* **Morchella Smithiana.** *Cooke Mycogr.*, t. 83, f. 318.

Terrington St. Clements. June, 1879.

123. **Helvella infula.** *Schæff.* t. 119. *H. suspecta* *Kromb.* t. 16, f.

1-6. *H. infula.* *Barla. Champ.*, t. 42, f. 14-16. *H. suspecta.*

Weber. Pilz. t. v., f. 1-1e. *H. infula.* *Cooke Mycogr.*, t. 92, f. 334.

Pileus lobed, deflexed, sometimes gyroso-undulate, smooth, rufous-cinnamon, or purple-brown, much paler and tomentose beneath, margin adhering firmly to the stem, becoming undulated; stem thickened above and below, stuffed, then hollow, smooth, villous, pallid, or purplish white, often here and there irregularly lacunose; asci cylindrical; sporidia ellipsoidvate, binucleate, $\cdot 018\text{--}\cdot 022 \times \cdot 008$ mm.; paraphyses septate, often twice or thrice branched, apices pyriform, coloured.

This species has occurred both in Scotland and England. The English specimens found in Norfolk were growing chiefly on wood, varying in size from 3 in. to 8 in. in height, and in considerable quantity.

124. **Peziza bulbosa.** *Hedw. Cooke. Mycogr.*, t. 48, f. 189.

Cups hemispherical, greyish-brown, minutely squamulose; disc nearly black; stem firm, squamulose, arising from a tuberous base; asci cylindrical; sporidia 8, subglobose, with a large nucleus, $\cdot 013 \times \cdot 01$ mm.; paraphyses stout, clavate at the summit.

Kings Lynn. July, 1879. On a garden lawn under hazel bushes.

125. **Peziza (Tarzetta, Cke.) muralis.** *Sow. Eng. Fung.*, t. 251.

Scattered, stipes short, expanding upwards into the turbinate fleshy cup, glabrous, pallid clay-colour; disc slightly concave or plane; asci cylindraceo-clavate; sporidia 8, ovate, $\cdot 014 \times \cdot 008$ mm.; paraphyses linear, rather stout.

Cups about $1\text{--}1\frac{1}{2}$ centimet. across.

By some oversight this species has been omitted from "English Flora," "Berkeley's Outlines," and "Cooke's Handbook." By the kind permission of the Rev. M. J. Berkeley we have been permitted to examine Sowerby's original specimen, and have given the result of the measurement of the sporidia above.

126. **Peziza (Pustularia, Cke.) indiscreta.** *n. s.*

Scattered or crowded, hemispherical, sessile, fleshy, somewhat verrucose, dark brown, margin thick; disc concave, black-brown; asci cylindrical; sporidia ovate, asperate, with one or two large nuclei, $\cdot 016\text{--}\cdot 018 \times \cdot 009\text{--}\cdot 01$ mm.; paraphyses linear, septate, rather clavate at the summits.

Cups from 3 mm. to 1 cent. across.

On the earth under lime trees. North Wootton.

127. **Peziza (Humaria) cervaria.** *Phil. Stevenson, Myco. Scot., p. 308*

Gregarious or crowded, sessile, thick in the centre, thin at the crenulate margin, chestnut-brown; disc concave, waved; asci broadly cylindrical, abruptly narrowed at the base; sporidia 8, oblong-ovate; paraphyses linear, forked at the summits, abundant.

Cups 1-4 mm. across. Sporidia 0.15×0.07 mm.

This species closely resembles *P. hepatica*, Batsch., but differs in having much smaller sporidia, and slenderer paraphyses, which are not thickened at the apices, and are forked.

On roe-deer's dung. July and August. Grantown, N.B. Rev. J. Keith.

128. **Peziza (Humaria) bovina.** *Phil. Stevenson, Myco. Scot., p. 308.*

Gregarious, sessile, with obconic base, expanded, umber colour; disc umbilicate, waved, with paler margin; asci cylindrical; sporidia 8, oblong-ovate; paraphyses scarce or none.

Cups 8-12 mm. across; exterior cells of the cup very large; 8 mm. in diameter; sporidia 0.19×0.09 mm.

On cow dung. Grantown. Rev. J. Keith.

129. **Peziza (Humaria) Keithii.** *Phil. Stevenson, Myco. Scot., p. 308.*

Gregarious or crowded, sessile, thick, turbinate, concave, then expanded, dull salmon colour, smooth; disc nearly plane, margin obtuse; asci broadish, clavato-cylindrical; sporidia 8, ovate; paraphyses scarce or none.

Cups 5-8 mm. across, external cells small, 0.1 mm. diameter. Sporidia $0.15-0.18 \times 0.07$ mm.

This species has an outline much commoner amongst *Ascoboli* than the *Pezizæ*, being thick and fleshy, with the hymenium but slightly depressed, the form of a flattened sphere.

On horse dung. Waterford, Scotland. Rev. J. Keith.

130. **Peziza (Sarcos.) hirtococcinea.** *n. s.*

Sessile, scattered or crowded, fleshy, hemispherical, then expanded, dull scarlet; margin incurved, clothed with scattered, pale-brown, obtuse, septate hairs, longest on the margin; flesh pale scarlet; asci cylindrical; sporidia 8, ovate, with one or two large nuclei, 0.22×0.11 mm.; paraphyses rather slender, clavate at the apices, filled with scarlet granules.

The cups are 6-10 mm. across. The hairs below the margin shorter, often clavate, composed of a single cell. The white mycelium at times conspicuous below the cups.

On mossy spots in the earth in pine woods. Forres. The Rev. J. Keith.

131. **Peziza (Dasyscyphæ) crucifera.** *Phil. Gard. Chron., 1878, p. 397, fig. 71. Stevenson, Myco. Scot., p. 313.*

Minute, gregarious, stipitate, white; cups at first globose, then expanded, clothed with short, septate, white hairs, with clavate summits crowned with cruciform crystals; stem rather long, villous to the base; asci cylindrical-clavate; sporidia 8, cylindrical, or narrowly fusiform, straight, $0.06-0.08 \times 0.01$ mm.; paraphyses as

broad but longer than the asci, acutely pointed. Whole plant about 5 mm. high.

On fallen twigs of *Myrica gale*. Capel Curig, North Wales; also in Norfolk, Scotland, and elsewhere.

132. **Peziza (*Dasyscyphæ*) *Rhytismæ*.** *Phil.*

Minute, gregarious, stipitate, white; cups at first globose, then expanded, clothed with short, white hairs bearing on their summits globular crystalline beads; stem rather long, villous to the base; asci cylindrical; sporidia 8, oblong-fusiform, $003\cdot005 \times 001$ mm.; paraphyses as broad but longer than the asci, acutely pointed.

Parasitic on *Rhytisma acerinum*. Fr. Scotland. The Rev. James Keith.

This is distinguished from its allies by its habitat, size of sporidia, and the rough globose beads on the points of the hairs.

133. **Peziza (*Dasyscyphæ*) *aranaea*.** *D. Ntrs. Micr. It. Dec. I., n. 1.*
Tricho-peziza, Sacc. *Michelia*, 1878, p. 253.

Cups minute, sessile, scattered, closed, then open, white, clothed with long white flexuous hairs; disc, when dry, pale yellow; asci clavate; sporidia 8, biseriate, oblong, or oblong-fusiform, 007×0015 mm.; paraphyses filiform.

On the inside of the husks of the Spanish chestnut. Holme Lacy. Oct., 1879.

The cups are about $1\cdot3$ mm. across. They are at first mere tufts of snow-white entangled hairs.

134. **Peziza (*Dasyscyphæ*) *œdema*.** *Desm. Ann. Sc. Nat., 1850.*
Stevenson, Myco. Scot., p. 317. P. epiphragmidium, Phil. in Herb.

Hypophyllous, sessile, very minute, somewhat crowded, globose, slightly pubescent, greyish-white, sub-tremellose; cups $1\cdot15$ mm., seated on a brown tuberous subiculum; asci minute, claviform, often curved; sporidia 8, biseriate, fusiform, $006\cdot009 \times 002$ mm.

It is a pleasure to bear our testimony to the extreme accuracy of the late M. Desmaziere, whose diagnosis given above of this interesting addition to our flora has required from us but few additions.

Parasitic on *Phragmidium* on decayed leaves of *Rubus*. Dolgelly, North Wales, and Scotland. Rev. J. Keith.

135. **Peziza (*Dasy*?) *nuda*.** *n. s.*

Scattered, plane or convex, with a long, solid, rather flexuous stem, pale orange-red, smooth, glabrous; asci cylindrical; sporidia 8, oblong or oblong-fusiform, $005\cdot01 \times 002\cdot003$ mm.; paraphyses broad, longer than the asci, acutely pointed, filled with granules.

On the ground amongst moss in fir woods. Scotland. Rev. J. Keith.

5 mm. high, $2\frac{1}{2}$ mm. across disc.

This is an anomalous species, having the long pointed paraphyses not hitherto observed in any section besides *Dasyscyphæ*,

yet destitute of hairs of any kind that would justify placing it in that section. A more extensive series of specimens may throw some further light on its nature.

* **Peziza (Hymenoscyphæ) pseudo-tuberosa.** *Rehm. Asco., No. 106.*

On acorns. North Wootton. Nov., 1879.

136. **Peziza (Hymenoscyphæ) concolor.** *Phil. Stevenson, Myco. Scot. p. 321.*

Gregarious, minute, stipitate, pallid, or dirty white, firm, thin, hemispherical, roughish; margin minutely finbriate; asci cylindrical-clavate; sporidia 8, oblong, rounded at the ends, $\cdot 008\text{--}\cdot 01 + \cdot 002\text{--}003$ mm., simple; paraphyses filiform.

Cups $\frac{1}{4}$ –1 mm. across.

On hard decorticated wood. Scotland. April. Rev. J. Keith.

137. **Peziza (Mollisia) versicolor.** *Desm. Ann. Sc. Nat., 1853. XX., p. 230. Stevenson, Myco. Scot., 325.*

Very minute, sessile, white-hyaline, fragile, glabrous, at first globose, then turbinato-concave, slightly furfuraceous externally; margin sub-denticulate; asci clavate; sporidia 8, oblongo-fusiform, biseriate, $\cdot 01\text{--}\cdot 015 \times \cdot 003$ mm.

On fronds of dead *Pteris aquilina*. June. Scotland. The Rev. J. Keith.

We could not observe the change of colour which M. Desmaziere says this species assumes when punctured.

138. **Peziza (Mollisea) melatephra.** *Lasch. Rabh. Herb. Myco., No. 825. Stevenson, Myco. Scot., p. 326.*

Minute, gregarious or scattered, soft, glabrous, rugulose, erumpent, sessile, nearly black, whitish at the margin, hymenium pallid-cineries; asci subclavate; sporidia narrowly fusiform, biseriate, $\cdot 012 \times \cdot 001$ mm., spuriously uniseptate; paraphyses slender.

On dead stems of *Carex*. Aug. Scotland. Rev. J. Keith.

139. **Peziza (Mollisea) excelsior.** *Karst. Myco. Fenn., p. 199. Stevenson, Myco. Scot., p. 326.*

Gregarious, sessile, disciform, convex, when dry concave, dirty white or cinerious; hymenium pallid; asci cylindrical, elongato-fusiform, ends pointed, numerous nuclei, becoming spuriously multiseptate, $\cdot 05\text{--}\cdot 065 \times \cdot 004\text{--}005$ mm., paraphyses filiform, branched.

On dead stems of *Arundo*, Aug. Scotland. Rev. Jas. Keith.

This is allied to *P. eustigiæformis*, B. & C., but differs in sporidia and structure of cup from that species.

140. **Peziza (Mollisea) fœcunda.** *Phil. Stevenson, Myco. Scot. p. 326.*

Scattered, minute, at first covered by the epidermis, then erumpent, concave, when moist fuliginous, paler on the margin, disc fuscous black; asci broadly clavate; sporidia 8, fusiform with 3 to 4 large nuclei, $\cdot 025\text{--}03 \times \cdot 004\text{--}005$ mm.; paraphyses filiform, enlarged at the apices. Cups $\cdot 5$ mm. across.

The fruit in this species is large and abundant in comparison with the size of the plant.

On dead stems of *Eleocharis*. Aug. and Sept. Scotland. Rev. Jas. Keith.

141. **Peziza (Mollisea) ventosa.** Karst. *Myco. Fenn.*, p. 188. Stevenson, *Myco. Scot.*, p. 326.

Gregarious, sub-sphaerico-applanate, becoming slightly convex, at first totally cinerious, then cinerious black, disc ochrey-pallid or totally cinerio-nigricant, margin elevated, most frequently flexuous, obtuse; asci cylindraco-clavate, or subcylindrical; sporidia elongato-fusiform, $\cdot 01\text{--}\cdot 02 \times \cdot 002\text{--}\cdot 0035$ mm.; paraphyses filiform.

On *Willow*. Spring. Scotland. Rev. J. Keith. Shropshire.

142. **Ascobolus viridulus.** *n.s.*

Scattered, sessile, hemispherical, concave, then expanded, and subemarginate, thick, pale yellowish green, coarsely granulated; asci clavate; sporidia 8, in one, sometimes two rows, elliptic, violet, becoming brown, longitudinally rimose, rimæ anastomosing, $\cdot 013 \times \cdot 006$ mm. Cups $\cdot 5\text{--}1$ mm. across.

On the rejectamenta of a bird (pigeon?).

Shrewsbury. Feb., 1878.

This has much the outward character of *Ascobolus furfuraceus* in a young state, but the sporidia are very much smaller.

143. **Ombrophila brunnea.** *n.s. Phil.*

Crowded, sessile, or sub-stipitate, concave, then expanded, becoming flexuous, yellowish-brown, glabrous; disc darker than margin; asci cylindrical; sporidia 8, ovate-oblong, rough bi- or multi-nucleate, $\cdot 016\text{--}\cdot 02 \times \cdot 005\text{--}\cdot 008$ mm.; paraphyses enlarged at the summits, adhering.

On herbaceous stems in damp spots. Forres. Rev. J. Keith.

144. **Phacidium calthæ.** *Phil. Stevenson, Myco. Scot.*, p. 344.

Hypophyllus, innate, congregated on brown spots, erumpent, disciform, convex, cinerious; asci broadly clavate; sporidia oblongo-fusiform or sub-clavate, enucleate; paraphyses filiform, occasionally forked at the apices; sporidia, $\cdot 015\text{--}\cdot 023 \times \cdot 005\text{--}\cdot 007$ mm.

On decaying leaves of *Caltha palustris*. Autumn. Scotland. Rev. J. Stevenson.

145. **Lophium læviusculum.** Karst. *Myco. Fenn.*, p. 246. *Lophium mytilinum*, Stev. *Myco. Scot.*, p. 349.

Perithecia gregarious, erumpent-superficial, sessile, linear-elongated, hysterioriform, black, nearly smooth, $\cdot 3\text{--}\cdot 7$ mm. long; asci fusiform elongated, $\cdot 54\text{--}\cdot 60$ mm. long, about $\cdot 06$ mm. broad; sporidia 8, fusiform-elongated, straight, or nearly straight, usually faintly triseptate, pale yellow, $\cdot 016\text{--}\cdot 022 \times \cdot 0025\text{--}\cdot 003$ mm. paraphyses numerous, crowded, slender.

On fir leaves. Forres. Rev. J. Keith.

The asci in our specimens are $\cdot 05 \times \cdot 004$ mm., and the sporidia $\cdot 015 \times \cdot 002\text{--}\cdot 003$ mm.

* **Torrubia capitata.** *Tul.*

Magnificent specimens of this very rare *Torrubia* were found Oct., 1878, by Miss L. M. S. Pasley, in Hampshire.

146. **Hypocrea tremelloides.** *Fr. Sys. Myc. ii., p. 335. Fuckel, Symb. Mycol., p. 184.*

Fleshy, convex, with a compressed base, pallid, ferruginous, umber, perithecia immersed; asci cylindrical octosporous, $\cdot 08 \times \cdot 004\text{--}\cdot 005$ mm.; sporidia globose, hyaline, $\cdot 004\text{--}\cdot 005$ mm.

Suften, Hereford. Oct., 1878. C. H. Spencer Perceval, Esq. Dinmore. Oct., 1878. C. B. P.

147. **Hypocrea citrina.** *Fr. forma. Fungorum, Karst. Myc. Fenn. ii., p. 204.*

On the hymenium of *Polyporus betulinus*. Fr. Darnaway Forest. Sep., 1879. Mr. Lind.

148. **Hypocrea rigens.** *Fr. El. ii., p. 61.*

Subcarneous, flattened, scarcely marginate, at length greenish-black, interior white, perithecia confined to the disc, scattered, asci linear, $\cdot 06\text{--}\cdot 08 \times \cdot 003$ mm. Sporidia 16, spherical, $\cdot 003$ mm.

On dead wood. Brandon. Nov., 1876.

This is the *Sphaeria lenta* of Schweinitz, not of Tode, and the *Hypocrea rufa* var. *umbrina* of Saccardo. Fung. Ven. Series, iv., 24; and Mycol. Ven., No. 689.

- * **Hypocrea alutacea.** *Fr.*

This plant has occurred two or three years at Dinmore, near Hereford. We believe it to be a parasitic *Hypocrea* on *Spathularia flavida*, as was first pointed out to us by Mr. C. E. Broome.

- 148*. **Hypocrea aureo-virida.** *Plow. & Cooke.*

Pulvinate then flattened, fleshy, pale yellow then orange, disc becoming olive. Perithecia confined to the disc immersed, asci linear. Sporidia 16, round, pale fuliginous, $\cdot 0037$ mm.

On rotten wood, oak and hazel. North Wootton. Nov., 1879.

149. **Hypomyces viridis.** *Karst. Myc. Fenn., ii., p. 211. Alb. & Schw. Consp., p. 8, t. vi., f. 8.*

Stroma very thin, widely effused, densely tomentose, yellow, becoming greenish. Perithecia very crowded, ovoid or spherical, apices conical, at length brown, almost black. Asci cylindrical, $\cdot 16 \times \cdot 007\text{--}\cdot 008$ mm. Sporidia eight uniseriate, elongate, straight or curved, simple or obscurely uniseptate, $\cdot 03\text{--}\cdot 036 \times \cdot 005\text{--}\cdot 006$ mm.

On some *Agaric* which had been attacked before it came out of the ground. At first golden yellow, then green.

Pl. 130 f. 1 a and b, represents the conidial state which was observed Sept., 1878; c and d the ascus and sporidia.

South Wootton, 1878-9.

150. **Hypomyces violaceus.** *Tul. Ann. Sc. Nat. t. xiii., 1860, p. 14, F. Carp. iii., p. 60.*

On *Fuligo varians*, in a saw-pit. Cawdor Castle. Sept., 1879.

151. **Hypomyces cervinus.** *Tul. Carp., iii., p. 51.*

The conidial state of this *Hypomyces*, *Mycogene cervina*, Ditm., was found at Castle Rising, on *Peziza acetabulum*, in May, 1872, and at Suften Court, Hereford, Oct., 1878, by Dr. M. C. Cooke, on *Peziza macropus*.

- * **Hypomyces chrysospermus.** *Tul.*

Magnificent ascigerous specimens were found in Chapelton Wood, Forres, by the Rev. John Stevenson, in September of last year.

152. *Hypomyces terrestris*. Plow. & Boud.

Conidia (*Botrytis agaricina*, Link.), parasitic on Agarics, consisting of hyaline tubes, branching, bearing at the extremity oval or pyriform conidia, filled with transparent granular endochrome, $\cdot 025\text{--}\cdot 03 \times \cdot 01$ mm.

Ascophore. Stroma fleshy, rather thick, 1-2 cm. in diameter, pale flesh-coloured. Perithecia subglobose, immersed, ostioli conical, projecting, red. Asci cylindrical, $15\text{--}2 \times \cdot 015$ mm. Sporidia 8, fusiform, acute, sometimes appendiculate, hyaline, uniseriate, $\cdot 03\text{--}\cdot 04 \times \cdot 008\text{--}\cdot 01$ mm.

I have found this plant for several years, but always without perfect fructification, until 1878. The ascophore at first resembles some *Corticium*, growing upon the naked ground, overrunning mosses, &c., but always on the spot where an Agaric has recently decayed, which has been destroyed by the conidial form. *Lactarius rufus* is the most frequent host, but other Agarics are also attacked by it.

King's Lynn, 1875-6-7-8.

M. Boudier has also met with the same species in France, a specimen of which he was kind enough to communicate.

Plate 130, fig. 2, *a* natural size, *b*, perithecia magnified, *c*, ascus, *d*, sporidia, *e*, sporophores, *f*, conidiæ, more highly magnified.

153. *Nectria Plowrightiana*. Sacc. Mich. p. 307. Plowright Sph. Brit., fasc. iii., No. 154.

Perithecia gregarious, sub-superficial, soft, sub-globose, red, $\cdot 5$ mm. diameter, ostioli punctiform, blackish, asci clavate, $\cdot 09\text{--}\cdot 1 \times \cdot 02\text{--}\cdot 022$, sporidia 8, biseriate, cylindraceo-fusiform, curved, $\cdot 04\text{--}\cdot 05 \times \cdot 006$ mm., 5-7 septate, enucleate, hyaline.

On dead stems of *Arctium lappa*, near Shrewsbury. Feb., 1878.

154. *Nectria ditissima*. Tul. Carp. iii., p. 73, t. 13. figs. 1-4.**155. *Nectria ribis*. Tode. Fung. Meck. ii., p. 31, t. 12, f. 103. Plow Sph. Brit. fasc. iii., No. 11.**

Cæspitose, stroma compact, perithecia subglobose, smooth, at first purplish-red, then brownish; ostioli papillate.

Asci clavati, $\cdot 09 \times \cdot 015$, sporidia fusiform, hyaline, uniseptate, not constricted, $\cdot 02 \times \cdot 006$ mm.

156. *Melanospora chionea*. Corda. Icon. i., t. 7, f. 297. = *Ceratestoma chionæum*. Fr. S. v. Sc. p. 396. *Sphæria chionia*. Fr. Sys. Myco. ii., p. 446. Fckl. Symbol., p. 126.

Perithecia scattered, sessile, globose, rugulose, pubescent, white; ostiolum often subulate, acute, yellowish. Asci broadly clavate, narrowed below into a stem. Sporidia biseriate, ovate, brownish, $\cdot 012 \times \cdot 008$ mm.

On fallen leaves of pine.

157. *Melanospora vervecina*. (Desm.) *Sphæria vervecina*. Desm. Ann. Sc. Nat., 1842, p. 103, c. in Fckl. Sym., p. 126.

Perithecia gregarious, minute, globose, depressed, flask-shaped, clothed with densely matted white hairs, seated on a brown tomentose subiculum; ostiolum very long, falcate, glabrous, brown,

having at the apex a pencil of white fibres. Asci clavate, very transparent. Sporidia 8, large, ovate, brown, nearly opaque, somewhat apiculate at each end, $\cdot 02$ mm. long by $\cdot 012$ mm. wide.

158. **Dothidea rimosa.** *Fr. Scirrha rimosa. Nke. Fekl. S. M., p. 221. Fr. Syst. Myc. ii., p. 427.*

Subcuticular, linear, oblong, bursting through the sheath in parallel fissures, stroma black, cells minute, crowded. Asci oblong, octosporous, $\cdot 082 \times \cdot 014$. Sporidia biseriate, oblong, uniseptate, hyaline, $\cdot 02 \times \cdot 007$ mm.

Forming conspicuous black elongated patches on the stems of the common reed.

On *Phragmitis communis*. Castle Rising. 1879.

Scirrha depauperata, Fekl., is obviously merely a foliicolous condition of this species.

159. **Dothidea frangulæ.** *Fekl. Symb. Myc., p. 222.*

Stroma erumpent, orbicular, convex or plane, black, opaque, grey within. Asci oblong, stipitate, walls of asci thick, $\cdot 088 \times \cdot 016$ mm. Sporidia 8, biseriate, oblong, obtuse at the ends, straight, unequally bilocular, not constricted at the septum, pale brown, $\cdot 022 \times \cdot 007$ mm.

On dead branches of *Rhamnus frangula*. Shrewsbury. 1875.

The sporidia of our plant agree in form and size with Fuckel's description, but appearances of secondary septa are observable in many instances.

160. **Nummularia gigas.** *n. sp.*

Erumpent, growing from the deeper portions of bark and sub-jacent wood, at first orbicular, then ellipsoid and elongate; upper surface black, concave, somewhat repand, rough from the prominent ostiola; stroma rather soft, cineritious then whitish. Perithecia confined to the lower part of the stroma, crowded, pyriform, mutually compressed, with long necks which terminate on the disc by prominent rounded black ostiola.

Asci cylindrical, stipitate, $\cdot 12\text{--}\cdot 15 \times \cdot 012\text{--}\cdot 015$. Sporiferous portion $\cdot 05\text{--}\cdot 06 \times \cdot 012\text{--}\cdot 015$ mm., sporidia 8, dark brown, uniseriate, oval or subrotund, rather various in form and size, at length nucleate, $\cdot 01\text{--}\cdot 012 \times \cdot 008\text{--}01$ mm.

The whole plant is from 3 to 5 cm. long, by 1 cm. wide, and from 3 to 5 mm. thick.

On birch, bursting through the outer bark. Ringstead Downs. 1876.

Pl. 130, fig. 3, *a*, specimen natural size, *b*, section of the same, *c*, asci, *d*, sporidia.

161. **Diaporthe Chailletii.** *Nke. Pyren. Germ., p. 276.*

Stroma more or less widely effused, forming irregular black spots upon the affected stems. Perithecia small, subglobose or depressed, abruptly attenuated into a short neck; ostiola punctiform, scarcely prominent, conical. Asci narrowly clavate, octosporous, sessile, $\cdot 042 \times \cdot 006$ mm. Sporidia biseriate, narrowly

fusiform, straight, acute at both extremities, hyaline at first and then quadripartite, $\cdot 012\text{--}\cdot 013 \times \cdot 002\text{--}\cdot 0003$ m.m.

On *Atropa belladonna*. Shrewsbury.

162. **Diaporthe importata.** *Nke. Pyren. Germ.*, p. 315.

Stroma effused, circumscribed by the blackened matrix. Perithecia small, globose, more or less depressed, ostiolar short, punctiform. Asci narrowly oblong or subcylindrical, octosporous, sessile, $\cdot 066\text{--}\cdot 075 \times \cdot 009$ mm. Sporidia uni or biseriate, fusiform, obtuse to subacute at the extremities, fusiform, 4-nucleate, 4-partite, slightly constricted in the centre, $\cdot 015 \times \cdot 004\text{--}\cdot 005$ mm.

On *Lycium barbarum*.

163. **Diaporthe rumicis.** *Nke. (inedit.) Plow, Sphæx. Brit. iii.*, No. 41.

King's Lynn. On dead stems of *Rumex*.

We have seen no description of this species, which was determined from Italian specimens distributed by Prof. Passerini, of Parma.

164. **Valsa lauro-cerasi.** *Tul. F. Carp. ii.*, p. 196. *Plow. Sp. Brit. fasc. iii.*, No. 21.

On branches of cherry laurel. Shrewsbury.

165. **Lophiostoma angustatum.** *Pers. Syn.*, p. 55. *Fuehl Syn. Myc.*, p. 158. *Fr. Sys. Myc. ii.*, p. 470.

Perithecia scattered, immersed, then prominent, globose, black; ostiolar linear, equal, narrow; sporidia oblong, obtuse at both ends, slightly curved, 5 septate, with occasional longitudinal septa, $\cdot 024\text{--}\cdot 03 \times \cdot 008$ mm.

On willow. North Wootton. Nov., 1879.

Sporidia sometimes 7 septate, with one or two longitudinal septa.

166. **Lophiostoma quadrinucleatum.** *Kars. Myco. Fenn. ii.*, p. 85.

Perithecia scattered, immersed upon a blackened spot, compressed; ostiolar linear, rather prominent, black, $\cdot 6$ mm. across; asci clavate, $\cdot 095\text{--}\cdot 1$ mm. long, $\cdot 016\text{--}\cdot 018$ mm. broad; sporidia 8, biseriate, oblong, obtuse at the ends, straight or nearly so, pale brown, three septate, four nucleate, scarcely constricted at the septa, $\cdot 025\text{--}\cdot 032$ mm. long, $\cdot 008\text{--}\cdot 01$ mm. broad; paraphyses filiform, slender.

On dead branches of *Rhamnus frangula*. North Wootton. 1876.

167. **Sordaria maxima.** *Niessl. Beitr.*, p. 38, t. vi., f. 42, a and b.

Perithecia gregarious, caespitose often confluent, ovoid, oblong or subpyriform, brownish-black, rugulose; asci clavate, cylindrical, stipitate, apex obtusely rounded, 4 spored; sporidia uniseriate, oblong, brownish-black, nucleate, involved in gelatine.

Perithecia $\cdot 6\text{--}12$ mm. in height.

Asci, sporiferous portion, $\cdot 14\text{--}\cdot 16 \times \cdot 02\text{--}\cdot 025$ mm.

Stem of ascus, $\cdot 265\text{--}\cdot 280$ mm. long.

Sporidia, $\cdot 034\text{--}\cdot 042 \times \cdot 018\text{--}\cdot 024$ mm.

Forres. Rev. J. Keith. On rabbit's dung.

168. **Sporormia minima.** *Awd. Hedwigia*, 1878, p. 66, t. 1, f. iii.

Perithecia globose, membranaceous, black when dry, olivaceous when moist; asci cylindrical or elongato-clavate, sessile, $\cdot 085 \times \cdot 012$ mm.; sporidia tetramerous, brown, surrounded by gelatine, $\cdot 032\text{--}\cdot 035 \times \cdot 006$ mm. All segments $\cdot 007$ mm. long, or perhaps with the terminal segments slightly longer.

On grouse dung. Sept. Aviemore. Rev. J. Keith.

* **Sporormia pulchra.** *Hansen. Fung. Fim., Dan., p. 113, t. ix., f. 1-6.*

Perithecia elongato-pyriform, black, with a neck straight or curved, often bent, greenish-grey, often semi-transparent, covered by mycelium, $\cdot 32\text{--}\cdot 42$ mm. high; asci cylindrical, nearly sessile, octosporous, $\cdot 16 \times \cdot 03\text{--}\cdot 038$ mm.; sporidia 7 septate, 8 jointed, constricted, involved in mucus brownish-black, $\cdot 047\text{--}\cdot 057 \times \cdot 012\text{--}\cdot 014$ mm.

On cow dung. Aviemore. Rev. J. Keith.

Plate 130 f. 4, a, ascus; b, sporidium, after Hansen.

169. **Sphæria (Clypeosphæria) hyperici.** *n. sp.*

Perithecia minute, buried in the substance of the bark, covered by the blackened shining epidermis; asci cylindrical or clavato-cylindrical, $07\text{--}09 \times \cdot 015\text{--}\cdot 02$ mm.; sporidia 8, uni or biseriate, cyaline, oblong, constricted, nucleate, various in size, $\cdot 015\text{--}\cdot 025 \times \cdot 005\text{--}\cdot 008$ mm.

This striking little species occurs on the dead stems of *Hypericum perforatum*. The sporidia are possibly triseptate, but although many specimens have been examined they have never been observed in this condition. One septum is central, another dividing the larger segment transversely.

King's Lynn. 1878-9.

Plate 130, fig 5, ascus and sporidia.

170. **Sphæria (Psilosphæria) Rhododendri.** *Melanomma Rhododendri. Rehm. Ascomy., No. 186. Plow. Sphær. Brit. iii., No. 47.*

On dead branches of *Rhododendron*. The Wrekin. February, 1878.

* **Sphæria revelata.** *B. & Br. Ann. N. H., No. 634, t. 11, f. 8.*

On *Symphoricarpos* and *Artemisia*.

Sporidia $\cdot 01\text{--}\cdot 015 \times \cdot 005\text{--}\cdot 008$ mm.

King's Lynn. 1877-8.

171. **Sphæria (Pleospora) graminis.** *Fekl. S. M., p. 139.*

Perithecia gregarious, free, moderate size, globose, becoming depressed, black, often covered with grey, lax, branched hairs as long as the diameter of the perithecium; ostium cylindrical, short, truncate, perforated; asci elongated, curved, $\cdot 0118$ mm. long, $\cdot 014$ mm. broad; sporidia 8, biseriate, cylindrical-fusiform, curved or straight, 10 septate, two terminal cells narrow, the third broader, $\cdot 038$ mm. long, $\cdot 007$ mm. broad, pale yellow; paraphyses filiform, branched, as long as the asci.

On *Phragmites communis*. Terrington. 1877.

172. **Sphæria aucupariæ.** *Lasch. Plow. Sphær. Brit. iii., No. 65.*

On living leaves of *Sorbus aucuparia*. Manchester, 1873. Mr. T. Brittain.

We have seen no description of this species, which is identical with specimens received from several Continental botanists.

173. **Sphæria filicum.** *Desm. Ann. S. Nat.* 1840, p. 187. *Aursswald, Syn. Pyren. Eur.*, p. 20, t. 6, f. 81. *Plow. Sp. Brit. fasc. iii*, No. 99.

Epiphyllus, spots sooty-black; perithecia crowded, minute, innate, slightly prominent, sub-globose, black; asci clavate; sporidia 3-4, oblong, binucleate, opaque.

On *Lastrea filis-mas*. Shrewsbury. 1875.

174. **Sphærella innumerella.** *Karst. Myco. Fenn. ii.* p. 182. *Plow. Sphæ Brit. fasc. iii.*, 98.

Perithecia hypophyllous, gregarious, erumpent spherical, pierced by a pore, black, .75-1 mm. broad; asci very shortly stipitate, cylindraco-clavate, sometimes obliquely swollen below, .042-.051 mm. long, .008-.009 mm. broad; sporidia 6, nearly triseriate, clavato-fusiform, one septum in the centre, not constricted, straight or curved, hyaline, .017-.024 mm. long, sometimes .018-.021 mm., .003-.004 rarely, .005 mm. broad.

On *Potentilla comarum*. Shrewsbury. August, 1877.

WOOLHOPE CLUB, 1879.

(Continued from p. 78.)

Cortinarius (Hydrocybe) imbutus. *Fr.*

Pileus fleshy, convex, obtuse, smooth, gilvous, growing pale, rather fibrillose about the thin margin; stem solid, equal, even, whitish, violet at the apex; gills adnate, rather distant, broad, greyish violet, then cinnamon.—*Fr. Hym.*, 390.

In woods. Dinmore.

Gomphidius glutinosus, *Fr.* Cabalva.

„ *viscidus*, *Fr.* Cabalva.

„ *maculatus*, *Fr.* Cabalva.

Paxillus leptopus, *Fr.* Dinmore.

Hygrophorus irrigatus, *Fr.* Holm Lacy.

„ *puniceus*, *Fr.* Holm Lacy.

„ *metapodius*, *Fr.* Cabalva.

„ *chlorophanus*, *Fr.* Cabalva.

„ *psittacinus*, *Fr.* Cabalva.

Lactarius pyrogalus, *Fr.* Dinmore.

„ *glyciosmus*, *Fr.* Dinmore.

„ *turpis*, *Fr.* Holm Lacy.

„ *avidus*, *Fr.* Cabalva.

„ *theiogalus*, *Fr.* Cabalva.

„ *pallidus*, *Fr.* Cabalva.

„ *vietus*, *Fr.* Cabalva.

„ *trivialis*, *Fr.* Cabalva.

Lactarius picinus. Fr.

Pileus fleshy, rigid, convex, then plane, umbonate, umber-brown, at first velvety, then with the disc becoming smooth, even; stem stuffed, rather spongy, even, smooth, paler; gills adnate, much crowded, ochraceous; milk acrid, white.—*Fr. Hym.*, 435; *Kromb. t.* 40, *f.* 20-22.

In pine woods. Foxley.

Russula cyanoxantha, *Fr.* Cabalva.

„ *lutea*, *Fr.* Cabalva.

„ *depallens*, *Fr.* Cabalva.

„ *Queletii*, *Fr.* Cabalva.

„ *fragilis*, *Fr.* Cabalva.

„ *emetica*, *Fr.* Cabalva.

Cantharellus cibarius, *Fr.*

„ *lutescens*, *Fr.*

„ *Houghtoni*, *Phil.* Holm Lacy.

Marasmius epiphyllus, *Fr.* Dinmore.

„ *androsaceus*, *Fr.* Dinmore.

„ *Hudsoni*, *Fr.* Foxley.

„ *confluens*, *P.*

„ *fetidus*, *Fr.* Holm Lacy.

Marasmius polyadelphus. Lasch.

Minute, snowy-white, rather tough. Pileus very thin, hemispherical, sulcate, flocculose; stem tough, floccose at the base; gills decurrent, almost fold-like.—*Fr. Hym. Eur.*, p. 165, sub *Omphalia*.

On dead leaves. Dinmore.

Marasmius splachnoides. Fr.

Inodorous. Pileus rather membranaceous, convex, then expanded and umbilicate, smooth, striate; stem horny, hollow, smooth, shining, reddish (brownish); gills somewhat decurrent, crowded, simple, and anastomosing, white.—*Fr. Hym.*, 478; *Fl. Dan. t.* 1678, *f.* 1.

Amongst pine leaves. Cabalva, Foxley.

Boletus laricinus, *Fr.* Dinmore.

„ *elegans*, *Fr.* Cabalva.

„ *flavus*, *Fr.* Foxley.

Polyporus lucidus, *Fr.* Foxley.

„ *cæsius*, *Fr.* Foxley.

„ *dryadeus*, *Fr.* Holm Lacy.

„ *Schweinitzii*, *Fr.* Cabalva.

Merulius corium, *Fr.* Foxley.

Hydnum cyathiforme, *Schff.* Cabalva.

„ *auriscalpium*, *Fr.* Dinmore.

Radulum orbiculare, *Fr.* Foxley.

„ *fagineum*, *Fr.* Foxley.

Grandinia granulata, *Fr.* Dinmore.

Thelephora cristata, *Fr.* Dinmore.

Stereum sanguinolentum, *Fr.* Holm Lacy.

Corticium puteanum, *Fr.* Holm Lacy.

„ *comedens*, *Fr.* Holm Lacy.

Clavaria fragilis, *Fr.* Dinmore.

„ *abietina*, *Fr.* Foxley.

„ *Kunzei*, *Fr.* Holm Lacy.

„ *rugosa*, *Fr.* Holm Lacy.

Pistillaria quisquilaris, *Fr.* Dinmore.

Tremella lutescens, *Fr.*

„ *albida*, *Fr.* Foxley.

„ *foliacea*, *Fr.* Foxley.

Næmatelia encephala, *Fr.* Cabalva.

Cynophallus caninus, *Fr.* Foxley, Dinmore.

Leocarpus fragilis, *Dicks.* Foxley.

Trichia fallax, *P.* Holm Lacy.

Ceratium hydroides, *A. & S.* Holm Lacy.

Hymenula Platani. *Lev.* Holm Lacy.

Amphigenous. Receptacles gregarious, innate, then erumpent, minute, orbicular or ovate, pulvinate, reddish, seated on a dried spot. Spores ovate, or curved, rounded at the extremities.—*Ann. Sci. Nat.*, 1848, ix., 128. *Fusarium Platani*, *Mont. Ann. Sci. Nat.*, 1849, xi., 55.

On leaves of *Platanus*, chiefly on the veins.

Piggotia astroidea, *B. & Br.* Cabalva.

Fusicladium pyrinum, *Lib.* Holm Lacy.

Puccinia Circaeæ, *Pers.* Dinmore.

Geoglossum hirsutum, *P.* Dinmore.

Spathularia flavida, *Pers.* Dinmore.

Peziza cochleata. *Fr.* Foxley.

„ *badia*, *Fr.*

„ *macropus*, *P.* Dinmore.

„ *succosa*, *Berk.* Dinmore.

„ *trechispora*, *Curr.* Dinmore.

„ *hepatica*, *Batsch.* Dinmore.

„ *echinophila*, *Bull.* Holm Lacy.

„ *gregaria*, *Rehm.* Dinmore.

Peziza (Dasyscypha) aranea. *Not.* Holm Lacy.

Cups minute (0·1-0·3 mm.), scattered, whitish, delicately villous, sessile; asci cylindrical; sporidia linear (·007 × ·005 mm.).—*Klotsch. Herb. Myc.* ii., 17.

On involucre of *Castanea vesca*.

Helotium fructigenum. *Bull.* Holm Lacy.

Trochila lauro-cerasi, *Fr.* Foxley.

NEW BRITISH LICHENS.

Communicated by the REV. J. M. CROMBIE, F.L.S.

The following *new species* of Lichens recently discovered in Great Britain have been recorded by Dr. Nylander in the "Flora," 1879, pp. 353-362, and 1880, pp. 10-13 :—

1. **Lecanora xantholyta.** *Nyl.*—Thallus vitelline, entirely leprose, thin, sublobate, subeffigurate at the circumference (K + purplish); apothecia not seen.

On limestone rocks; always sterile. Great Orme's Head (Holmes); Bathampton Downs (Joshua); near Stokesay, Shropshire (Leighton).

2. **Lecanora superiuscula.** *Nyl.*—Similar to *Lecanora complanata* Krb. (Arn. Exs., n. 496), but differing chiefly in the spores being definitely larger, 0.010-14 mm. long, 0.007-8 mm. thick. Spermatia arcuate, 0.018-25 mm. long, 0.0006 mm. thick.

On schistose rocks above Loch-na-Gat, Ben Lawers (Crombie, 1878).

3. **Lecanora phæleucodes.** *Nyl.* Thallus whitish, effuse, areolato-diffract; apothecia small, brown, biatoroid, immarginate; hymeneal gelatine bluish and then wine-reddish (especially the thecæ) with iodine. Spermatia arcuate, 0.016-20 mm. long, 0.0005 mm. thick.

On calcareous rocks, Island of Lismore, Argyleshire (Crombie, 1877).

Nylander observes that this is almost a variety of *L. erysibe*, but it has the external appearance of *L. leucophæa*, and approaches to *L. subalbens* *Nyl.*

4. **Lecidea illita.** *Nyl.*—Thallus subisabelline or pale-greyish, thin or very thin, applanate, areolato-diffract, areolæ angulose (Ca. Cl. + red); hypothallus very thin, umbrine-black; apothecia black, innate, 1 or 2 in each thalline squamule, minute, margined, umbonate in the centre; spores 8 μ , ellipsoid, simple, 0.012-16 mm. long, 0.008-0.011 mm. thick, paraphyses slender, somewhat sparing, peritheciium and umbo in thin section brownish-black; hypothecium thin, subcolourless; hymeneal gelatine tawny wine-red with iodine; spermatia acicular, 0.005-6 mm. long, 0.0005 mm. thick.

On argillaceous schist in the W. of England (Larbalestier). It is closely allied to *L. umbonatula* *Nyl.*

5. **Lecidea tabidula.** *Nyl.*—Thallus blackish, thin or very thin, unequal, subscattered; apothecia black, minute, plane, somewhat margined, often aggregated, concolorous within; spores 8 μ , ellipsoid, 0.011-16 mm. long, 0.006-7 mm. thick, epithecium sordid bluish-black, paraphyses not well discrete, hypothecium (with the peritheciium) dark-brown (or reddish-brown in thin section);

hymeneal gelatine bluish and then tawny wine-coloured with iodine.

On quartzose stones. Summit of Ben-y-gloe, Blair Athole (Crombie, 1876). It is comparable with *L. deparcula* Nyl., but differs in the characters of the thallus, the paraphyses and the reaction of the hymeneal gelatine.

6. *Lecidea nigrogrisea*. Nyl.—Thallus griseo-greyish, granulate-areolate, moderate or somewhat thin, the areolate convex, subshining (K. —, Ca. Cl. —); apothecia black, plane, thinly margined, sufficiently crowded; spores 8 μ , ellipsoideo-oblong, simple, 0.007-0.011 mm. long, 0.004-5 mm. thick, paraphyses submoderate, epithecium and perithecium blackish, hypothecium brown; hymeneal gelatine bluish with iodine, spermatia straight, 0.006-8 mm. long, 0.006 mm. thick.

On micaceo-schistose stones of a wall, Craig Tulloch, Blair Athole (Crombie, 1876). It most probably belongs to the section of *L. fimbrosa*.

7. *Opegrapha paraxanthodes*. Nyl.—Thallus pale-yellow or pale-greenish, thin, subsmooth, minutely areolate-rimose (when rubbed bright green); apothecia black, oblong or lineari-oblong, epithecium rimiform; spores 8 μ , oblong 5—usually 4—septate, 0.023-25 mm. long, 0.008-9 mm. black; hymeneal gelatine tawny wine-reddish with iodine; spermatia straight, 0.005-7 mm. long, 0.0006 mm. thick.

On shady calcareous rocks, Achnanure, Galway (Larbalestier). It has entirely the appearance of *O. xanthodes* Nyl., but differs in the character of the spores.

8. *Opegrapha devulgata*. Nyl.—Nearly similar to, and perhaps a subspecies of, *O. vulgata*, with spermatia arcuate 0.008-0.012 mm. long, 0.0005 mm. thick.

On semiputrid trunks—Airds, Appin, Argyleshire (Crombie, 1877).

9. *Opegrapha nothiza*. Nyl.—Thallus whitish-griseous, thin, somewhat firm, minutely areolate-diffract, hypothallus brownish-black, obsolete or evanescent; apothecia black, oblongo-deformed, margined, epithecium plane; spores oblong, 3-septate, 0.015-17 mm. long, 0.0035-0.0045 mm. thick, paraphyses submoderate. Spermatia straight, 0.005 mm. long, 0.0005 mm. thick.

On quartzose rocks. Island of Jersey (Larbalestier). It is allied to *O. grumulosa*.

10. *Opegrapha actophila*. Nyl.—Thallus greyish, very thin, effuse or subevanescent; apothecia linear (or sublinear), subflexuose, epithecium rimiform or at length somewhat explanate; spores oblongo-fusiform, 5-septate, 0.021-31 mm. long, 0.005-6 mm. thick; spermatia straight, bacillar, 0.004-5 mm. long, 0.0005 mm. thick.

On maritime felspathic rocks. Island of Jersey (Larbalestier). It looks like *O. rimalis* saxicole, but it seems to be a distinct species.

11. **Endococcus exerrans.** *Nyl.*—Peridia pyreniiform, black, minute, on a very thin, blackish, scattered thallus; spores 8 næ, blackish, oblong, 1-septate, 0·010-15 mm. long, 0·0045 mm. thick; hymeneal gelatine wine-reddish with iodine.

On quartzose stones. Ben-y-Gloe, Blair Athole (Crombie, 1877). A species well distinguished by the attenuated spores.

In addition to these the following new subspecies and varieties from Great Britain and Ireland are also recorded by Nylander in the former of the above papers:—

* **Calicium curtiusculum.** *Nyl.*—Thallus whitish, granulated; apothecia shortly stipitate, capitula lentiform, whitish pruirose at the extreme margin; spores 0·006-0·010 mm. long, 0·0035-0·0045 mm. thick.

On wood and old pales. Cambridge (Larbalestier); Lewes, Sussex (Crombie). A subspecies of *C. quercinum*.

Lecanora Hutchinsia f. congregabilis. *Nyl.*—Thallus thin, subgranulated, apothecia often aggregate-acervulate; spermatia arcuate, 0·014-22 mm. long, 0·0005 mm. thick.

On shady rocks. Kylemore, Galway (Larbalestier).

Lecidea syncomista* perpallescens. *Nyl.*—Similar to the type, but with the apothecia pale or pale-testaceous, entirely diluted.

On the ground in crevices of rocks. Island of Lismore, Argyleshire (Crombie).

Lecidea glomerulosa* chloroleprodes. *Nyl.*—Thallus subleprose, effuse, continuous.

On the bark of trees. Cambridge (Larbalestier).

MYCOLOGIA SCOTICA.*

Unfortunately pressure of matter in our last issue prevented the insertion of a notice of this volume. It is with unfeigned pleasure that we now direct the attention of our readers to the fact that the long promised *Mycologia Scotica* has appeared, that it makes a good substantial volume, is clearly and neatly printed, and is, in fact, all that such a work should be.

No one was more fitted than the author to have undertaken it. He has made himself so practically acquainted with the higher fungi, as they are usually termed, of Scotland, and worked for some years so indefatigably in hunting them out, that his experience rendered him the right man for the work. Add to this his active participation in the work of the Cryptogamic Society of Scotland, and his zealous co-operation with all the Mycologists north of the Tweed, and his fitness is fully assured.

* *Mycologia Scotica*. The Fungi of Scotland and their Geographical Distribution by Rev. John Stevenson. Edinburgh, 1879.

The *Mycologia* commences with a Map of Scotland, divided into Botanical Districts. Then follows an introduction, giving an account of the aim and arrangement of the work, and the manner in which these have been carried out. This is succeeded by the *Flora* itself, extending over upwards of four hundred pages, giving names of the species, reference to description, locality, period, and geographical distribution. Descriptions of such species only are given as are not included in the "Handbook" or the "Myxomycetes." The book gives evidence of having been produced with care, and is furnished with an exhaustive index. Hence it will be seen that not only was its author the fittest person, but he has accomplished his work in such a manner as fully to satisfy his friends, and disarm his critics. As only a very limited number of copies were printed beyond the number of subscribers, those who may be desirous of possessing a copy of one, which will soon become a "rare book," must bestir themselves, ere it be too late. Application should be made to the Author, Glamis, Forfarshire.

SOME NEW SPECIES OF FUNGI FROM THE JURA AND THE VOSGES.

(Communicated to the Woolhope Club, 1879.)

By Dr. QUELET.

(With Plate 131).

Pluteus tenuiculus. *Q.*—Stem very slender, pruinose, white; pileus thin, subspherical (5-8 mm.), smooth, *striate*, bistre; gills broad, rounded, white, then rose-coloured; spores elliptic (0-01 mm.), containing 4-5 small granules, grouped together in the centre.

Spring. On heaths in the neighbourhood of la Rochelle. (G. Bernard).

Hydnum amicum. *Q.**. (Nees d'Esenbeck, t. 241 ?).—Stem short, fibrous, with an arachnoid tomentum, tawny; pileus (0-1 mm.), undulato-repand, scalloped, thin, tomentose, whitish-grey; flesh fleshy-fibrous, cottony above, greyish, *striate* with purplish-livid streaks; smell and odour acid; spines short (2 mm.), thin, crowded, pale *lilac-grey*, turning brown when touched; spores spherical (0-04-5 mm.), verrucose, hyaline.

Summer. In rings and *cæspitose* in sandy woods. Vosges; Montmorency. (E. Boudier).

* In remembrance of pleasant excursions with my friend, E. Boudier, in the forest of Montmorency, in 1876, 1877, and 1879.

Rhizopogon suavis. *Q.*—Oblong, bullate ($\cdot 0\cdot 01$ mm.), tomentose, pale yellow (changing to brown when exposed to the air), adhering to chesnut-coloured fibres, which terminate in an arachnoid net; substance *compact*, elastic, hyaline then olive, giving out a delicate odour of honey; cells rounded, with thin white silky walls; spores (5-7 on each basidium), pruiniform ($\cdot 0005\text{--}\cdot 7$ mm.), ochraceous, with two nuclei.

Summer. Woods on the lower hills of the Jura.

Tuber fulgens. *Q.*—Globular ($\cdot 01\text{--}2$ mm.), *hollowed out*, *papillose-furfuraceous*, tawny-orange with the *opening sulphur-coloured*, substance hard, aromatic, apricot yellow or subconcolor, marbled with white veins; sporidia spherical ($\cdot 03$ mm.), alveolate, tawny.

Summer. Woods on the lower hills of the Jura. Differs from *T. excavatum* by its colour, tubercles and sporidia.

Peziza (Cupularis) ampelina. *Q.*—Cupule-shaped, waxy, fragile, hemispherical then scalloped ($\cdot 02\text{--}3$ mm.), whitish, granular-furfuraceous; hymenium *moist, shining*, dark-violet then purplish; sporidia lanceolate-ellipsoid ($\cdot 015\text{--}02$ mm.), with two nuclei.

Summer. Gregarious on rubbish heaps (sand and cinders), in court-yards and gardens. Near *P. Boltonii*, *Q.* (Soc. Bot. Bul., t. xxv., p. 290).

Peziza (Humaria) muralis. *Q.*—Cupule-shaped, hemispherical (1-2 mm.), waxy, soft, villous, white, with a lemon-coloured villous margin; hymenium plane, light gold-colour then orange; sporidia cymbiform ($\cdot 02\text{--}3$), with two or three nuclei.

From autumn to spring. On old walls, amongst *Bryum argenteum* and *Phascum muticum*.

Phialea lilacea. *Q.*—Cup-shaped, obconical (1-2 mm.), delicate, pellucid, smooth, violet-lilac; hymenium hollow, lilac-glaucous; sporidia lanceolate, elliptic ($\cdot 008$ mm.) with two nuclei.

Spring. *Fasciculate* on submerged wood in the marshes of the plains of Alsace. Differs from *Helotium clavus* by the form of the hymenium, hollowed out cone-shaped, by its violet colour and by its shorter lanceolate sporidia.

Helotium sulfurinum. *Q.*—Cup-shaped ($\cdot 5\text{--}1$ mm.), substipitate, delicate, pruinose, white or tinged with lemon-colour; hymenium sulphur-yellow, shining, *hyaline white* in rainy weather; sporidia fusiform ($\cdot 012$ mm.), with four nuclei straight or incurved.

Spring. Gregarious on dry hazel branches. Lower hills of the Jura.

Helotium stagnale. *Q.*—Disk plano-convex (5 mm.), fleshy, firm, smooth, amber or livid flesh-colour, turning brown; stem (3-5 mm.), often very long ($\cdot 01\text{--}2$), darker at the base (eventually wrinkled at the top); sporidia elongate-elliptic ($\cdot 013$ mm.), with two nuclei.

Spring. On chips, borders of ponds in the plains of Alsace.

Peziza (Mollisia) opalina. *Q.*—Discoidal-lentiform (1 mm.), waxy, firm, smooth, diaphanous, hyaline or lilac; hymenium plane, lilac or glaucous, *amethyst-colour* when dry; sporidia bacilliform ($\cdot 012$ mm.)

Spring. On submerged sticks on the edges of the turf-bogs of Alsace.

Lachnella lactea. *Q.*—Cupule-shaped, oval-spherical ($1\cdot 2$ mm.), firm, rough, with a fine, white, *silky* web, composed of toothed hairs; hymenium white, then cream-colour; sporidia acicular ($\cdot 015$ mm.), pluriseptate.

Spring. Gregarious on large plants in the lower hills of the Jura. (Confounded with *Cyphella villosa*, under the name of *Peziza villosa*, P.)

Ascophanus ruber. *Q.*—Globular-hemispherical (1 mm.), orange-red then brick-red, *rough* with long fine shining white hairs; hymenium plane, papillose; sporidia oblong-elliptic ($\cdot 02$ mm.), hyaline, with a nucleus.

Spring. Gregarious on cow-dung in the pastures of the Jura. Differs from *Ascobolus ciliatus*, Schm., by not having a white margin, and by its colourless sporidia.

NOTE.—An illustrative plate will be given in a succeeding number.

NEW YORK FUNGI.

By M. C. COOKE.

The following few specimens from the State of New York were communicated by W. R. Gerard, Esq. :—

- | | |
|---|----------|
| Merulius ambiguus. <i>Berk. in N. A. Fungi.</i> | |
| On trunks. | No. 252. |
| Scleroderma geaster. <i>Fr.</i> | |
| Subterranean form. | No. 248. |
| Coniothyrium rubellum. <i>Cke.</i> | |
| Sparsum. Peritheciis membranaceis, parvulis, brunneis, in maculis roseis nidulantibus. Sporis ovoideis, pallido-fuscis ($\cdot 005 \times \cdot 003$ mm.) | |
| On naked wood. | No. 259. |
| Discosia artocreas. <i>Desm.</i> | |
| On acorns. | No. 244. |
| Sphaeropsis gallorum. <i>Schwz.</i> | |
| On galls of <i>Celtis</i> . | No. 251. |
| Diplodia celastri. <i>Cke.</i> | |
| Cæspitosa, erumpens. Peritheciis atris, compressis, elongatis, vix papillatis. Sporis ellipticis, uniseptatis, brunneis, vix constrictis ($\cdot 025 \times \cdot 01$ mm.) | |
| On twigs of <i>Celastrus</i> . | No. 240. |

Diplodia compressa. Cke.

Diatrypeformis, erumpens. Peritheciis in cæspitalis erumpentibus congestis, atris. Sporibus late ellipticis, uniseptatis, nec constrictis, brunneis ($.02 \times .012-.014$ mm.)

On branches of *Rhus* (?). No. 255.

Pestalozzia concentrica. B. & C.

On leaves of *Castanea*. No. 264.

Hendersonia glabra. Cke. in *Grevillea*.

On bark of *Betula*. No. 234.

Epidochium nigricans. Fr. (*Exosporium tilia*. Ger.)

On *Tilia*. N. Y.

Uromyces spermacoces. Schw.

On *Diodea*. No. 254.

Uromyces asclepiadis. Cke. *Uromyces Howei*. Pk.

On *Asclepias*.

Uromyces Desmodii. Cke. in *Rav. Fung. Amer.*

On *Desmodium*. No. 250.

Puccinia tiarellæ. B. & C.

On *Tiarella*. Catskill Mts.

Peziza cochleata. Bull.

On the ground. Catskill Mountains. No. 267.

Apparently this species, but specimen bad.

Peziza (Mollisia) cinerea. Batsch.

On rotten wood. Catskill Mountains. No. 257.

On *Vitis*. New York.

Peziza (Mollisia) chrysocoma. Bull.

On rotten wood. No. 257.

Peziza (Tapesia) sanguinea. P.

On chips. No. 230.

Helotium macrosporum. Pk.

On naked wood. No. 242.

Diatrype atropunctata. Schwz.

On bark. No. 232.

Eutypa limæformis. Schwz.

On bark. No. 235.

Valsa prunastri. Fr.

On branches. Catskill Mts. Nos. 245, 237b.

Massaria Gerardi. (Pro. tem.)

Sporidia very large, $.09-.012 \times .03$ mm., brown, 3-5 septate; but specimen too imperfect for description.

On bark. No. 263.

Dothidea ribesia. P.

On *Ribes*. No. 228.

Psilosphæria melasperma. Cke.

Erumpens, demum denudata. Peritheciis globosis, atris, lævibus, subnitidis. Ostiola crasso, prominulo. Ascis cylindræis. Sporidiis elliptico-acuminatis, fuliginæis, nucleatis, demum uniseptatis, dein nigrescentibus, opacis ($.035 \times .012$ mm.)

On naked wood. No. 237a.

Perithecia gregarious. Sporidia so dark and opaque when mature that the septum is masked.

Psilosphaeria atramentosa. *Schwz.* No. 237.
On wood.

Lasiosphaeria canescens. *P.* No. 227.
On wood.

Conisphaeria peniophora. *Cke.*
Sparsa. Peritheciis atris, conicis, ad basim applanatis, lævibus. Ascis amplis, clavatis. Sporidiis fusiformibus, medio constrictis, uni-dein leniter, 3-5 septatis, utrinque acuminatis, fuscis ($\cdot 01 \times \cdot 014$ mm.)

On bark. Nos. 236, 239.
Sporidia for some time hyaline, with a granular endochrome and uniseptate, at length becoming pale brown, with the endochrome divided.

Conisphaeria pertusa. *P.* No. 238.
On wood.

Sphaerella ilicella. *Cke.*
Epiphylla. Peritheciis punctiformibus, atris, in maculis orbicularibus, albis, sparsis. Ascis clavatis. Sporidiis fusoideis, hyalinis, uniseptatis, constrictis, cellulis binucleatis ($\cdot 02 \times \cdot 006$ mm.)
On leaves of *Ilex opaca*. No. 262.

Sphaerella nigrita. *Cke. in Grevillea.* No. 265.
On oak leaves.
Without fruit.

REVUE MYCOLOGIQUE.

We would direct the attention of British Mycologists to the publication in France, under the above title, of a quarterly journal devoted to Mycology and Lichenology. It is edited by M. C. Roumeguere, and the price is twelve francs per annum. Hitherto it has consisted chiefly of abstracts and reprints, but it is hoped that when it attains better working order it will also permit original articles to preponderate. However, it would hardly be expected of us to pronounce any very decided opinion on the merits of a contemporary. We can only wish it success.

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Animals in respect of their Nutrition. An Address to Medical
Students.
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qui peuvent se trouver dans la bière et le mout de bière et y vivre.
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21, 1879.
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gamique.
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gique." Jan., 1880.
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Jan., 1880.
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Bot. Ital." Jan., 1880.

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A QUARTERLY RECORD OF CRYPTOGAMIC BOTANY AND ITS LITERATURE.

BRITISH DESMIDS.

An introductory List of Desmidiaceæ found in the British Islands, since "Ralfs' Desmidiæe."

The following list has been compiled with the view to the collection of information as to the occurrence of Desmidiaceæ in these Islands since 1848. Any additions are solicited, to be sent to the "Editor," at the earliest possible convenience, in order that they may be incorporated in a work now in course of preparation.

Gonatozygon Ralfsii, *DeBary, Conjug.*, p. 76.

(*Docidium asperum*. Ralfs., t. 26, f. 6.)

Archer, in Pritchard Infusoria (1861), p. 722.

Co. Tipperary (Ireland). Yorkshire.

Gonatozygon Brebissonii, *DeBary, Conjug.*, p. 77.

(*Docidium asperum*. Brebisson, in Ralfs, t. 26, fig. d.)

Archer, in Prit. Inf. (1861), p. 732.

(*Leptocystinema Portii*. Archer, in Nat. Hist. Rev., 1858, p. 251).

Ireland.

Leptocystinema Kinahani. *Archer, in Nat. Hist. Rev.*, Vol. V., p. 250.

Archer, in Prit. Inf. (1861), p. 722.

Ireland.

Sphærozozma filiforme. *Ehr. Meteorp.*, t. 1, f. 20.

Archer, in Prit. Inf. (1861), p. 724.

Archer, in Micr. Journ. (1869), p. 197.

Co. Tipperary (Ireland).

Spondylosium secedens. (*DBy.*) *Archer, in Prit. Inf.*, 1861, p. 704.

(*Sphærozozma secedens*. DeBary.)

Archer, in Micr. Journ. (1871), p. 92.

Kylemore, Co. Galway (Ireland). Also in Essex.

Spondylosium pulchellum. *Archer, in Prit. Inf.*, (1861), p. 724.

Archer, Micr. Journ., xvii. (1877), p. 191.

Ireland.

Tetrachastrum mucronatum. *Dixon, in Nat. Hist. Rev.* (1859) VI., p. 465.

Archer, in Prit. Inf. (1861), p. 725.

Co. Tyrone (Ireland).

- Tetrachastrum oscitans.** (Hass.) Dixon, in *Nat. Hist. Rev.* (1859), VI., p. 465.
(*Micrasterias oscitans*. Ralfs.)
- Tetrachastrum pinnatifidum.** (Kütz.). Dixon, *Nat. Hist. Rev.* (1869) vi., 455.
(*Micrasterias pinnatifida*. Ralfs.)
- Micrasterias Thomasiana.** Archer, in *Micr. Journ.* (1862), II, p. 239.
Featherbed Mountain.
- Micrasterias angulosa.** Hantsch, in *Rabh. Alg. Eur.*, No. 1407.
Archer, in *Micr. Journ.* (1876), xvi., p. 109.
Co. Westmeath (Ireland).
- Euastrum circulare.** Hassall, *F. W. Algæ* (1845), p. 383, t. 90, f. 5.
Ralfs' Desm., t. 14, f. 3 a.
- Euastrum sinuosum.** Lenorm. fide Ralfs Archer, in *Pritch. Inf.* (1861), p. 729.
Euastrum circulare, var. β . Ralfs' Desm., t. 13, f. 5, a, b, d.
- Euastrum Jenneri.** Archer, in *Prit. Inf.* (1861), p. 729.
Euastrum circulare, var. γ . Ralfs' Desm., t. 13, f. 5, c.
- Euastrum binale.** (Turp.) Ralfs. Desm. var. **angustatum.** Wittr., *Sotv. Alg.*, t. 4, f. 8.
Archer, in *Micr. Journ.* (1873), xiii., p. 315.
Ireland.
var. **insulare.** Wittr. *Sotv. Alg.*, t. 4, f. 7.
Archer, in *Micr. Journ.* (1873), xiii., p. 315.
Ireland.
- Cosmarium undulatum.** Corda *Almanac de Carlsb.* (1839), p. 243, t. 5, f. 26.
Archer, in *Prit. Inf.* (1861), p. 732.
- Cosmarium pygmæum.** Archer, in *Micr. Journ.* (1864), IV., 174.
Dublin Mountains.
- Cosmarium exiguum.** Archer, in *Micr. Journ.* (1864), IV., p. 178.
Dublin Mountains.
- Cosmarium tuberculatum.** Archer, in *Micr. Journ.* (1862), II, p. 247.
Piperstown Road, Co. Dublin.
- Cosmarium tetragonum.** (Näg.) Archer, in *Prit. Inf.* (1861), p. 732.
(*Euastrum tetragonum*. Næg.)
Archer, in *Micr. Journ.* (1877), xvii., p. 102.
Rocky Valley, Toole's Rocks, Connemara (Ireland). Scotland.
- Cosmarium Brebissonii.** Jacobsen, *Desm. Denm.*, t. 7., fig. 15. not Ralfs.
Archer, *Micr. Journ.* (1877), xvii., p. 305.
Co. Carlow (Ireland).
- Cosmarium Portianum.** Archer, in *Prit. Inf.* (1861), p. 733. *Micr. Journ.* (1860), p. 235.
= *Cosmarium orbiculatum*. DeBary *Conjug.* (1858), t. vi., f. 49, a, b. = *Cosmarium pseudomargaritifera*. Reinsch.
Dublin and Wicklow Mountains.
- Cosmarium DeBaryi.** Archer, in *Prit. Inf.* (1861), p. 735.
(*Pleurotenium cosmarioides*. DeBary.)

- Cosmarium punctulatum.** *Breb. Listo. p. 129, t. 1, f. 16. not Lundell.*
Archer, *Micr. Journ.*
Ireland.
- Cosmarium truncatellum.** *Perty Kleinst Lebensf. (1852), p. 209, t. 16, f. 13.*
Archer, in *Micr. Journ.* (1873), xiii., p. 99.
Toole's Rocks (Ireland).
- Cosmarium speciosum.** *Lundell, Desm. Suec. (1871), p. 34, t. 3, f. 5.*
Archer, in *Micr. Journ.* (1873), xiii., p. 101.
Rocky Valley (Ireland).
- Cosmarium tetrachondrium.** *Lundell, Desm. Suec. (1871), p. 38, t. 3, f. 2.*
Archer, *Micr. Journ.* (1873), xiii., p. 315.
Co. Tipperary.
- Cosmarium Hammeri.** *Reinsch. Alg. Mitt. Franken, p. 109, t. 9, f. 1.*
Crowe, *Micr. Journ.* (1873), xiii., 435.
Ireland.
- Cosmarium plicatum.** *Reinsch Algenflora, pl. 9, fig 1 d.*
Barker, *Micr. Journ.* (1873), xiii., 435.
(*Cosmarium sinuosum.* Lund. Desm. Suec., p. 47.)
(*Cosmarium quadratum.* Ralfs Desm., t. xv., f. 1 c., variety.)
Ireland.
- Cosmarium cyclicum.** *Lundell Desm. Suec. (1871), p. 35, t. 3, f. 6 d.*
Archer, *Micr. Journ.* (1877), xvii., p. 102; xv. (1875), p. 412.
The form recorded by Reinsch, was also found in Scotland and Ireland.
- Cosmarium minutissimum.** *Archer, Micr. Journ. (1877), xvii., p. 194.*
Ireland.
- Cosmarium lasiosporum.** *Archer, in Micr. Journ. (1879), xix., p. 123.*
Ireland.
- Cosmarium hexalobum.** *Nordst. (variety). Archer in Micr. Journ. (1879). xix., p. 441.*
Ireland.
- Cosmarium lobatosporum.** *Archer, in Micr. Journ (1867), vii., p. 171.*
Kilbride, Co. Wicklow.
- Cosmarium annulatum.** (*Näg. sub. Disphinctium annulatum. Næg. Ein. Alg., p. 110.*)
Archer, in *Micr. Journ.* (1870), x., p. 92.
Rocky Valley, Mullingar (Ireland).
- Cosmarium tenue.** *Archer, in Micr. Journ. (1868), viii., p. 293.*
Ireland.
- Cosmarium Schliephackianum.** *Grun. in Rab. Fl. Alg., p. 167.*
Nordstedt, Desm. Arct. (1875), p. 24, t. 7, f. 15.
Archer, in *Micr. Journ.* (1876), xvi., 338.
Rocky Valley (Ireland).
- Cosmarium holmiense.** *Lundell Desm. Suec. (1871), p. 49, t. 2, f. 20.*
var. β .
Archer, in *Micr. Journ.* xv. (1875), p. 409.
var. *minor*.
Archer, in *Micr. Journ.* xvi. (1876), 344.
Ireland.

- Cosmarium anceps.** *Lundell, Desm. Suec.* (1871), p. 48, t. 3, f. 4.
Archer, *Micr. Journ.* (1875), xv., p. 409.
Bray Head (Ireland).
- Cosmarium Reinschii.** *Archer, in Micr. Journ.* (1876), xvi., p. 109.
Cosmarium, sp. *Reinsch. Contrib.* (1875), t. xviii., f. 4.
Ireland.
- Cosmarium quinarium.** *Lundell Desm. Sueciæ* (1871), p. 28, t. 2, f. 14.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Cosmarium reniforme.** *Archer, in Journ. Bot.* III. (1874), p. 93.
(*Cosmarium margaritifera*, var. *reniforme*. Ralfs' Desm.)
England, Wales, Scotland, Ireland.
- Cosmarium hexastichum.** *Lundell, Desm. Suec.* (1871), p. 33, t. 3, f. 13.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Cosmarium quadrifarium.** *Lundell, Desm. Suec.* (1871), p. 32, t. 3, f. 12.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Cosmarium Nymannianum.** *Grunow, in Rabh. Fl. Alg.* (1863), III., 166.
Nordstedt Norges Desm. (1873), p. 17.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Cosmarium calcareum.** *Wittr. Sotv. Alg.*, t. 4, f. 13.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Cosmarium variolatum.** *Lundell, Desm. Suec.* (1871), p. 41, t. 2, f. 19.
Archer, in *Journ. Bot.* (1874), iii., 93.
Ireland.
- Cosmarium pseudopyramidatum.** *Lundell, Desm. Suec.* (1871),
p. 41, t. 2, f. 18.
Archer, in *Journ. Bot.* (1874), iii., 93.
Ireland.
- Cosmarium pseudoconnatum.** *Nordstedt Desm. Braz.* (1873), p. 214,
t. 3, f. 17.
Archer, in *Journ. Bot.* (1874), iii., 93.
Ireland.
- Cosmarium gotlandicum.** *Wittr. Sotv. Alg.*, t. 4, f. 14.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.
- Xanthidium Robinsonianum.** *Archer, in Micr. Journ.* xx. (1880), p. 114.
Ireland.
- Xanthidium Smithii.** *Archer, in Prit. Inf.* (1861), p. 736.
Wareham.
- Arthrodesmus bifidus.** *Breb. Liste*, p. 135, t. 1, f. 19.
Archer, in *Prit. Inf.* (1861), p. 736. *Micr. Journ.* (1870), p. 90.
Mullingar (Ireland).
- Arthrodesmus tenuissimus.** *Archer, in Micr. Journ.* (1864), IV., p. 175.
Dublin Mountains.

- Staurastrum OMearii.** *Archer, in Nat. Hist. Rev.* (1858), p. 254.
 Archer, in *Prit. Inf.* (1861), p. 738.
 Ireland.
- Staurastrum glabrum.** (*Kütz.*) *Ralfs Desm.* (1848), p. 217.
 Archer, in *Prit. Inf.* (1861), p. 738.
- Staurastrum Brebissonii.** *Archer, in Prit. Inf.* (1861), p. 739.
 (*Staurastrum pilosum*, *Breb.*)
- Staurastrum cristatum.** *Näg. Einz. Alg.* (1849), p. 127, t. 8 C, fig. 1.
 sub **Phycastrum.**
 Archer, in *Prit. Inf.* (1861), p. 738. *Micr. Journ.*, 1866, p. 189.
Staurastrum nitidum, Archer, *Nat. Hist. Rev.* (1859), p. 463.
 Ireland.
- Staurastrum proboscideum.** (*Breb.*) *Archer, Prit. Inf.* (1861),
 p. 472.
 (*Staurastrum asperum*, var. β *Ralfs' Desm.*, t. 23, f. 12 b, c.)
- Staurastrum oxyacantha.** *Archer, in Nat. Hist. Rev.* VI. (1859), p.
 462, t. 33, f. 1. *Prit. Inf.* (1861), p. 742.
 Ireland.
- Staurastrum læve.** Var. **Clevei.** *Wittr. Anteckn.* (1871), p. 18, f. 9.
 Archer, in *Micr. Journ.* (1871), p. 92.
 Kylemore, Co. Galway.
- Staurastrum lanceolatum.** *Archer, in Micr. Journ.* (1862), II., p. 248.
 Dublin Mountains.
- Staurastrum longispinum.** *Bailey, Micr. Obs.* (1850), pl. 1, f. 17.
 Archer, *Micr. Journ.* xii. (1872), p. 199; xvii. (1877), p. 192.
 Connemara (Ireland).
- Staurastrum Meriani.** *Reinsch, in Acta, Senckenb.* VI., p. 125, t. 23,
 D 1.
 Crowe, *Micr. Journ.* (1873), xiii., p. 437.
 Woodenbridge, Co. Wicklow.
- Staurastrum ophiura.** *Lundell Desm. Suec.* (1871), p. 69, t. 4, f. 7.
 Archer, *Micr. Journ.* (1873), xiii., p. 311; (1877) xvii., p. 192.
 Connemara.
- Staurastrum artiscon.** (*Ehr.*) *Lundell Desm. Suec.* (1871), p. 70,
 t. 4, f. 8.
 Archer, in *Micr. Journ.* (1874), xiv., p. 214; (1877) xvii., p.
 192.
Xanthidium (?) *artiscon.* Archer, in *Prit. Inf.* (1861), p. 736.
 Connemara.
- Staurastrum sexangulare.** *Bulnheim, in Hedvigia* II., p. 51, t. 9 A,
 f. 1.
 Archer, in *Micr. Journ.* (1877), xvii., p. 192.
 Connemara.
- Staurastrum Royanum.** *Archer, in Micr. Journ.* (1877) xvii., p. 103.
 Pass of Glencoe (Scotland).
- Staurastrum elongatum.** *Barker, in Micr. Journ.* (1869) IX., p. 424;
 (1871) XI., p. 93.
 (*Staurastrum terebrans.* *Nordstedt Norges Desm.* (1873), p. 34,
 f. 16.)
 Glengariff, Kylemore (Ireland).

Staurastrum arcuatum. *Nordstedt Norges Desm.* (1873), p. 36, f. 18.
Archer, in *Journ. Bot.* (1874), iii., p. 92.
Ireland.

Staurastrum oligocanthum. *Breb. in litt.*
Archer, in *Micr. Journ.* (1862), ii., p. 67; (1866) p. 189.

Staurastrum Griffithianum. *Näg. Ein. Alg.* (1849), p. 128, t. 8 C. 2.
Archer, in *Micr. Journ.* (1862), ii., p. 67; xiv. (1866), p. 67.
Regarded by some as a form of *Staurastrum spongiosum*.

Staurastrum Pringsheimii. *Reinsch. Alg. et Fung.* (1867), t. 5, f. B 2.
Archer, *Micro. Journ.* (1872), xii., p. 86.
Cos. Kerry and Cork (Ireland).

Staurastrum verticellatum. *Archer, in Micr. Journ.* (1869) p. 196.
Connemara (Ireland).

Staurastrum maamense. *Archer, in Micr. Journ.* (1869) ix., p. 200.
(*Staurastrum pseudo-crenatum*, *Lundell Desm. Suec.* (1871), p. 65, t. 4, f. 4.)
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Galway (Ireland).

Staurastrum apiculatum. *Breb. Liste Desm. Norm.,* p. 142, t. 1, f. 23.
Archer, *Micr. Journ.* (1868), viii., p. 65.
Ireland.
Considered by some as a variety of *Staur. dejectum*, *Breb.*

Staurastrum pileolatum. *Breb. in Ralfs Desm.,* p. 215.
Close, in *Micr. Journ.* (1873), xiii., p. 99.
Leenane, Co. Galway (Ireland).

Staurastrum cerastes. *Lundell Desm. Suec.* (1871) p. 69, t. 4, fig. 6.
Archer, *Journ. Bot.* (1874), iii., 99; *Micr. Journ.*, xii. (1872), p. 202.
Ireland.

Staurastrum aversum. *Lundell Desm. Suec.* (1871), p. 59, t. 3, f. 27.
Archer, in *Journ. Bot.* (1874), iii., p. 93.
Ireland.

Staurastrum Sebalii. *Reinsch, in Acta Senckenb.* vi., p. 133, t. 24 D 1.
var. β *ornatum.* *Nordstedt Norges Desm.* (1873), p. 34, f. 15.
Archer, in *Journ. Bot.* (1874), iii., p. 91.
Ireland.

Staurastrum inconspicuum. *Nordstedt Norges Desm.* (1873) p. 26, f. 11.
Archer, in *Micr. Journ.* x. (1870), 89. *Journ. Bot.* (1874), iii., p. 91.
South and west of Ireland.

Staurastrum paradoxum. *Meyen.*
var. β *longipes.* *Nordstedt Norges Desm.* (1873), p. 35, f. 17.
Archer, in *Journ. Bot.* (1874), iii., p. 92.
Ireland.

Docidium hirsutum. *Bailey, Micr. Obs.* (1850), pl. 1, f. 8.
Archer, *Micr. Journ.* (1879), xix., p. 438.
Ireland.

- Docidium nodosum.** *Bailey, Obs. t. 1, f. 4.*
var. *dentatum.* Archer, in *Quart. Micr. Journ.* (1872), xii., 193.
Connemara (Ireland).
- Docidium nobile.** *Richter, in Hedwigia* (1865), p. 129.
Archer, in *Micr. Journ.* (1872), xii., p. 86.
Co. Kerry, Co. Cork (Ireland).
- Docidium coronatum.** (*Ehr.*) *Breb. in Ralfs Desm.,* p. 217.
Archer, in *Prit. Inf.* (1861), p. 745.
Archer, *Micr. Journ.* (1874), xiv., p. 214.
Ireland.
- Closterium directum.** *Archer, Micr. Journ.* (1862), II., p. 249.
Dublin Mountains.
- Closterium Pritchardianum.** *Archer, in Micr. Journ.* (1862), II., p. 250.
Howth, Dublin Mountains.
- Closterium prælongum.** *Breb. Liste, p. 152, t. 2, f. 41.*
Archer, in *Prit. Inf.* (1861), p. 747.
Ireland.
- Closterium gracile.** *Breb. Liste, t. 2, f. 45.* (not of Lundell.)
Archer, in *Prit. Inf.* (1861), p. 748.
Ireland.
- Closterium Cynthia.** *Not. Desm. Ital.,* p. 65.
Archer, *Micr. Journ.* (1868), viii., p. 118.
Ireland.
- Closterium aciculare.** *West, in Micr. Journ.* (1860), p. 153.
Archer, *Micr. Journ.* (1862), ii., 31; (1866) vi., 181.
Yorkshire, King's Co. (Ireland).
- Closterium lineæ.** *Perty Lebensf.* (1852), p. 206, t. 16, f. 20.
Archer, *Micr. Journ.* (1866), vi., p. 71.
Dublin Mountains. Also Essex.
- Closterium obtusum.** *Brebisson Liste, p. 154, t. 2, f. 46.*
Archer, *Micr. Journ.* (1876), xvi., p. 338.
Ireland.
- Closterium calosporum.** *Wittr. Anteck.* (1871), p. 23, f. 11.
Archer, in *Micr. Journ.*, xiii. (1873), p. 100.
Toole's Rocks (Ireland).
- Closterium Archerianum.** *Cleve, in Lundell Des Succ.* (1871), p. 77, t. 5, f. 13.
Archer, *Micr. Journ.* (1873), xiii., p. 213.
N. Wales. Galway (Ireland).
- Closterium lagoense.** *Nordst.*
Archer, *Micr. Journ.* (1873), xiii., 213.
Connemara.
- Closterium monotænium.** *Archer, in Micr. Journ.* (1876), XVI., p. 415.
Ireland.
- Penium Nagelii.** *Breb. in Prit. Inf.* (1861), p. 751.
Closterium digitus. *Näg. Ein. Alg.* (1849), p. 107, t. 6 D.
Ireland.

- Penium navicula.** *Breb. Liste Desm.* (1856), t. 2, f. 37.
 Archer, in *Prit. Inf.* (1861), p. 751.
 (*Penium Berginii.* Archer, *Nat. Hist. Rev.* (1858), v., p. 256.)
 Ireland.
- Penium Mooreanum.** *Archer, in Micr. Journ.* (1864), p. 179.
Penium pusillum. *Delponte*, t. 15, f. 34-36 (?).
 Dublin Mountains, and near Lough Bray.
- Penium spirostriolatum.** *Barker, in Micr. Journ.* (1869), ix., p. 194.
 Connemara (Ireland).
- Penium didymocarpum.** *Lundell Desm. Suec.* (1871), p. 84, t. 5, f. 9.
 Archer, in *Micr. Journ.* (1873), xiii., p. 213.
 N. Wales. Connemara (Ireland).
- Cylindrocystis diplospora.** *Lundell Desm. Suec.* (1871), p. 83, t. 5, f. 7.
 Archer, in *Journ. Bot.* (1874), iii., 94.
 Ireland.
- Mesotænium chlamydosporum.** *DeBary Conj.* (1858), p. 75, t. 7 D.
 Archer, in *Micr. Journ.* (1864), p. 124, t. 1, f. 1-19.
 Ireland.
- Mesotænium mirificum.** *Archer, in Micr. Journ.* (1864), p. 130, t. 1,
 f. 20-31.
 Ireland.
- Mesotænium violascens.** *DeBary Conj.* (1858), p. 74, t. 7 B.
 Crowe, in *Micr. Journ.* (1873), xiii., p. 319.
 Ireland.
- Spirotænia parvula.** *Archer, in Micr. Journ.* (1862) II., 254.
 Dublin Mountains (Ireland).
- Spirotænia truncata.** *Archer, in Micr. Journ.* (1862), II., p. 253.
 Dublin Mountains (Ireland).
- Spirotænia minuta.** *Thuret, in Breb. Liste.*
 Archer, *Micr. Journ.* (1868), viii., 68.
 (*Spirotænia erythrocephala* (Braun). Archer, in *Prit. Inf.*
 (1861), p. 751?)
 Carrig Mountain.
- Spirotænia tenerrima.** *Archer, in Micr. Journ.* (1870), p. 203.
 Ireland.
- Cosmarium laeve.** *Rabh. var. septentrionale.* *Wille, Nova Zembla,*
p. 43, tab. xii, fig. 34.
 Around London, and perhaps common throughout Britain.

Localities other than those enumerated, especially in England
 and Scotland, desired.

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OBSERVATIONS ON PEZIZA.

By M. C. COOKE.

It is manifestly an advantage, in whatever work we may be engaged, to pause occasionally, and take a calm and quiet retrospect, and, it may be, indulge in some reflections upon what has been attempted or achieved. It is with some such a feeling that we have been led to look over the volume of "*Mycographia*" which was recently brought to a close; and before we again proceed with that work, there are some reflections which it may not be deemed wholly inappropriate for us to communicate. They must be accepted as suggestive rather than dogmatic, and rather as subjects to be thought over than questions fully determined.

In order to assist in this retrospect it may be as well, in the first instance, to indicate what we conceive to be the principal features in *Peziza* which are necessary to be taken into account in the determination of a species, but before doing so we would quote two or three short sentences, written by one of the most persistent thinkers on these subjects, which in some measure induced us to enter upon these observations. "In genera having more than the average number of species in any country, the species of these genera have more than the average number of varieties." "In large genera the species are apt to be closely, but unequally, allied together, forming little clusters round certain other species." "Species very closely allied to other species apparently have restricted ranges." "No one supposes that all the individuals of the same species are cast in the same actual mould." "Individual differences generally affect what naturalists consider unimportant parts, but parts which must be called important sometimes vary in the individuals of the same species." "The amount of difference considered necessary to give any two forms the rank of species cannot be defined." These axioms are placed at the head of our observations, without any regard to sequence or comment, as they will have to be referred to hereafter. And now to return to the principal features which are to be considered in the determination of species in the large genus to which the larger portion of the first volume of "*Mycographia*" is devoted.*

1. *Habitat*. Although no one could be so rash as to assert that a species is dependent on its habitat, that fact must be taken into consideration. It may happen that the individuals of a certain species have invariably been found growing upon the naked ground, but should a closely allied form be found flourishing on rotten wood, or dung, or a plastered wall, this circumstance would be taken into account, not by itself, or on its own merits alone, but

* And yet less than half the number of species known to us have at present been illustrated.

in conjunction with other variations. Because, in the greater number of instances, the same species is not found in such diverse habitats. Usually a terrestrial species, such as *Peziza rutilans* is absolutely confined to soil, but instances are not unknown, as in *Peziza scutellata*, where the same species may occur as well on rotten wood as on naked soil, or *Peziza hepatica*, where the same species may be found on dung as well as on the earth. Exceptions of this kind are sufficiently rare to enable us to include the habitat as one of the minor considerations which have to be taken into account.

2. *Dimensions*. The average size of a species is usually indicated within limits to which the individuals are found to conform. Although the beautiful *Peziza aurantia* under ordinary circumstances reaches from one to two or three inches in diameter, yet the same species has been found growing under conditions in which the largest individual did not exceed a quarter of an inch. Nevertheless should such a species as *Peziza scutellata*, which is usually less than a quarter of an inch, be found attaining a diameter of two inches, such a circumstance would at once lead to an enquiry whether such a form could be the same species. All other conditions being equal, the same rule must apply to *Peziza scutellata* as to *Peziza aurantia*, notwithstanding that a dwarfed form of a large species is much more probable than a much increased form of a minute species. As with habitat, so with dimensions, a difference, however great, cannot be considered of itself as possessing specific value.

3. *Form*. Nothing is more variable than external form, which is subjected to influences of many kinds, and particularly to the conditions and circumstances under which the plant is developed. Yet the departure is seldom so great as to obliterate the character of the original type. In appreciating form as an element of classification, perhaps the most useful feature to regard is the presence or absence of a distinct stem. Distinctly stipitate species are seldom entirely sessile, probably never. Such species as *Peziza macropus* without a stem would be as rare as a white crow. In the minute caulicolous species there is often some difficulty in determining the exact limit between stipitate and sessile, but in the larger species this difficulty is seldom experienced. It is somewhat doubtful whether the presence or absence of a stem may not have a somewhat exaggerated importance in the Friesian arrangement. Under any circumstances the stem, being merely the axis of the vegetative system, can only be of secondary importance. Stipitate species will, if covered or obstructed, elongate the stem considerably in the efforts made by the cup to expose its disc to the light. In like manner when growing on a plane surface, and in full light, the stem will be much abbreviated. This may be well observed in *P. coccinea*, which from its habit of growing on sticks in old hedges has often to struggle for existence under difficulties. Apart from the stem other modifications of form seem to us too unstable,

except where a peculiarity is strongly marked, to prove of much value. Except in such rare instances as the oblique attachment of the cup to its support, as in *P. micropus* and *P. dochmia*, or the oblique or convolute forms of such species as *P. cochleata* and *P. onotica*. The auriculate form of the cup in *P. onotica*, *P. auricula*, and *P. leporina* appear to be as permanent characters as the stem of *P. macropus*. In other species, as in *P. alutacea*, *P. adæ*, &c., some individuals will possess the cochleate form, strongly developed, whilst other individuals will scarcely exhibit a trace. In a few instances the outward form is always sufficiently distinct and uniform for the identification of the species, but these instances are few and far between.

4. *Margin*. This partakes very much of the indefinite character which pertains to the form of the cup, except in such instances as those in which the margin has some appendages of a special character. Involution, revolution, laceration have no value, inasmuch as they may depend on age, moisture, or accidental circumstances. When the margin is distinctly dentate as in *P. cupularis*, *P.* or *P. subrepanda* C. and Ph., or furnished with rigid processes as in *P. Hindsii* or *P. tricholoma*, or closely contracted as in *P. geaster* and *P. sepulta*, so that it cannot expand without splitting into lobes, such features have their value, because they are comparatively permanent. Hence that feature which may be important in one species is entirely valueless in an other* for lack of definite character.

5. *Attachment*. Here again nine species may present no feature of importance, whilst the tenth may, in its mode of attachment to its matrix, furnish an almost distinctive character. Such rooting species as *P. ammophila*, *P. radiculata* and *P. pusio* are of this nature; and so also are the species which are attached by a tuft of black fibres like horsehair as *P. melastoma*, *P. hirtipes* and *P. japonica*. And so, to a less extent are those small species which produce an abundant white mycelium, upon which the cups are developed, and which remains for a long time as a thin byssoid stratum around the cups as in *P. omphalodes*, *P. domestica*, *P. chartarum*, and a few others, notably the majority of those included by us under the sub-generic name of *Pyronema*.

6. *Exterior*. The external surface of the cup may be naked, or downy, or clad with rigid hairs; or it may be mealy, or warted, or rugose. Whatever may be its character, those which are fugacious are scarce worthy of consideration, certainly should not enter into the distinctive features of a species. Crystals, granules, fugitive pubescence, are of a doubtful value when they are confined to youth and immaturity. The appendages of the exterior are often of considerable value when they are permanently developed. Hairs

* As all our illustrations are drawn from the sections represented in "Mycographia," it is to these alone that our observations are intended to apply.

agglutinated laterally into scales, or forming an adpressed fibrous coat, or elongated into distinct hairs or bristles growing singly or in bundles, are all features which seem to be of importance. So also is the nature of the hairs themselves, whether simple, or forked, or stellate, rough or smooth. The branching of hairs is to be treated with caution, since the simple hairs in some species exhibit a branching tendency when supplied with abundant moisture. In like manner the external cells, in species with a glabrous exterior, have furnished us by their size, disposition and texture with valuable aid in the determination of species possessed of little individual character. It will not escape notice, that, of all the external features which characterise the members of this genus, none have so much asserted their claim to recognition, or impressed us so strongly with their value, as an aid to classification, as the external cells and their appendages.

7. *Disc.* The hymenial surface, or disc of the cup is usually coloured, sometimes brightly, at others inconspicuously. At present we have failed to trace any relationship between this colouring and the habitat of the species. Very little reliance can be placed upon the colour of the disc as a distinctive feature. Carmine red varies sometimes to pink and even to white.* Yellows are apt to blanch or turn brown. Still there are some negative results which observation has furnished. Decided orange, such as *Peziza aurantia*, is not liable to variation, except in intensity. Verdigris-green, though not common, never seems to disappear or be superseded. When the cups have long been dried, and are moistened again, the green may be seen to pervade the substance of such species as *Peziza jungermanniæ*. Purples are less permanent, but to a considerable extent possess the same property. The same disc will sometimes vary very considerably with age, passing from flesh-colour to brown, from white to cinereous, and from cinereous to white. The colour of the disc in *Peziza* is, perhaps, scarcely more reliable than that of the petals in flowering plants, or, at least, uncultivated flowering plants.

8. *Texture.* This has but a narrow range in the present genus; tough, coriaceous, waxy, and other textures are excluded, and relegated to other genera, so that all which remain are assumed to have a soft, fleshy substance, containing a large percentage of water, which causes the plant to shrivel and collapse in drying. Nevertheless, some are more gelatinous than others, and become in drying reduced to a thin film. When a supposed species of *Peziza* retains its form and expanded disc, without shrivelling or cracking in the process of dessication, it may very reasonably be concluded that *Peziza* is not the genus to which it legitimately belongs. It need hardly be said that what is characteristic in the texture of one individual in a species will be so of all, since we have no experience

* A white variety of *Peziza coccinea* is sometimes to be found in company with its crimson relatives.

of any modification, as the result of any conditions in which the plant would sustain life. *Peziza succosa* appears to be always brittle and juicy; *P. cupularis* dry, and *P. omphalodes* little more than a drop of gelatine.

9. *Asci*. These are cylindrical in nearly all the large species of the genus. In the few species in which the asci are clavate, there is a manifest suspicion of their being degraded forms of *Ascophanus*. To this group belong *P. salmonicolor*, *P. hæmastigma*, *P. scatigena* and *P. cynocopra*. At the best they are not good typical forms of *Peziza*. Not long since Mons. Boudier expounded a very ingenious theory for the classification of the Discomycetes*, based on the mode of dehiscence of the asci. Notwithstanding its ingenuity, it is unfortunately absolutely impracticable. "It is only by examining the species in a fresh state that any perfection can be attained in a study so difficult as the classification of the *Pezizæ*," he says, and intimates also that fresh specimens are necessary for the determination of the dehiscence. The greater part of the new species which will have to be recorded will be on the basis of dried specimens, for which dehiscence cannot be determined. Hence, such a suggestion is analogous to proposing that for the future only living insects should be named and classified, a suggestion which would scarcely commend itself to the entomologist. The use of iodine as a re-agent in the study of the asci is open to a similar objection; it is only to be relied upon when fresh specimens are employed. Some authors seem to place almost equal reliance upon the length of the asci, as upon the dimensions of the sporidia. We do not object to the length of the asci being given, but we do not accord to this the value which has been assumed for it.

10. *Paraphyses*. We have no hesitation in according to the paraphyses a higher rank in classificatory importance than the asci. They are undoubtedly subsidiary organs in the life of the plant, but they possess more character, participate less actively in the great functions of the hymenium, are less subject to change, and of more practical value to the mycologist. Wherever these organs partake of a specialised character it is maintained not as the accidental eccentricity of an individual, but as an attribute of the species; at least, such is our opinion, based upon a multitude of observations. The mode and extent of branching may not always be identical. In some individuals they seem to be more highly developed than in others. Still, there is a general type peculiar to certain species, and another type common to other species, which facilitates determination, even where the sporidia are so similar as to furnish but little assistance.

11. *Sporidia*. However much we deprecate a system so artificial as the establishment of genera based on the form and septation of sporidia, we accord the place of honour to sporidia, in the series of features to be taken into account, in the diagnosis of a species.

* "Grevillea," Vol. viii., p. 45.

We are not advocating the exclusive use of the sporidia, or any one organ, in characterising a species, but, whatever others may be omitted, we regard these as essential to a complete character.

The form of the sporidia may vary within certain limits even in the same individual, but never to any considerable extent; what may be called the type of sporidia remains the same, whether elliptical, oval, globose, cylindrical, fusiform or linear. The size, nevertheless, may vary to a greater extent. It is noticeable that the proportions of the long to the short axis seldom undergo any great change in the same species when the sporidia are broad. When the sporidia are narrow or cylindrical, the variation is usually one of length. Compared with other fungi, the fructification of the *Pezizæ* exhibit no disadvantage; the uniformity in each species, of both size and form, are quite equal to that of the same organs in any other of the Ascomycetes.

The epispore is sometimes smooth, at others warted, spiny or reticulated. These forms are usually regarded as sufficiently stable to hold high rank in the essential character of a species. It may be safely affirmed that this feature is much more reliable than the septation of the sporidia in the Pyrenomycetes.

As to the contents of the sporidia, little can be said. We are well aware of the fact that some excellent and careful mycologists attach a considerable weight to the absence, presence or number of nuclei (so called) which characterise the sporidia. We never shared their faith in nuclei. After many years' experience, we still see no reason to alter this opinion. We have many times mechanically caused all the nuclei to disappear or be absorbed in the specimen under treatment. We have seen them three times as numerous in the sporidia from a given individual on one day as they were in the same individual a week afterwards. Tested in all ways, there seemed to be no reliance upon them in the large species on which our observations were made. Faith thus shaken has never encouraged us to renew the examinations, or place reliance where we did not deem it deserved.

The number of sporidia in each ascus scarce needs mention, as eight is so uniformly the normal number, that tetrasporous forms are rare, so rare, indeed, that we have no opportunity of ascertaining whether such species as *P. tetraspora* are ever octosporous.

Coloured sporidia occur but rarely, and it need hardly be said that the species in which they are found can dispense with many other distinctions, and rely upon that as almost all-sufficient.

There is but one other point which calls for remark. The "gelatina hymenea," so strong in Lichens, is seldom observable in the Discomycetes, because uncoloured or weak, and then chiefly in *Ascobolus*. In a few of the medium-sized *Pezizæ*, it is distinct, and particularly in *P. Phillipsii* and *P. jungermanniæ*. The rarity of any distinct intimation of its presence, imparts to this feature a value which it does not possess intrinsically, and only acquires on account of its rarity.

We have now briefly noticed all the features which have to be taken into account in the determination of *Peziza*. From the comparison of these an opinion has to be derived. It is not one character alone, however valuable, which should guide a determination, but a comparison of all, and a decision in favour of the preponderance. Diagnoses of species in which no attention is given to the hymenium, and especially to the sporidia, are entirely valueless ; so also are those in which external features are ignored, and the form of the sporidia alone invested with a specific value. Species, as well as genera, and genera as well as species, should follow an uniform principle in their construction. It can only be the source of endless confusion to give undue prominence to any single organ to the prejudice of others. This results in distorted caricatures, and not faithful sketches, in the delineation of Pezizoid character. The recognition of the fact that "in large genera the species are apt to be closely and equally allied together, forming little clusters round certain other species" should not be interpreted as an indication of the imperfection of the genus, and the necessity for splitting it up into a string of minor genera, based on slight and insufficient characters. The present age promises to be better known in the future by its failures than by its successes in mycological classification. This is mainly due to a lack of a philosophical appreciation of the principles on which all scientific order is based.

By some such process as the comparison of its salient features, as we have indicated, with those of its allies, have the species already figured in the genus *Peziza* come into existence. It has been very rarely an exceptionally strong development of a single important character, but in the majority of instances a number of small differences, each insufficient in itself, which has determined a species. Wherever species are closely allied, and present only such differences as can be ascertained by careful and minute comparison, a far greater responsibility rests with the author of a new specific name, than in small genera where the species are few and distinct. In such cases it would be unjust and unfair to an author to affirm that he had multiplied species without just cause, whereas the failure would most probably lie with the critic, unaccustomed to such comparisons, or lacking in experience to temper his judgment with discretion. Manifestly it is a difficult task to appreciate the relation of species with species in a genus consisting perhaps of no less than a thousand. This difficulty is intensified in family clusters, where a number of species are closely ranged around a central type. How much this is the case with *Peziza* may be estimated by analysing one or two of its groups of species.

Let us, for example, select as a most marked and characteristic group, that which, in our final arrangement of species, we have denominated as the sub-genus *Scutellinia*. Here it is manifestly the old species *Peziza scutellata* of Linnæus, which is the centre of

radiation, or type. Around this one some twenty others are aggregated, presenting differences which can only be accurately estimated by a practised eye. It is unnecessary to revive the vexed question as to what constitutes a species. "The amount of difference considered necessary to give any two forms the rank of species cannot be defined," and yet such differences will be found to exist, whether we call the different forms by the name of "species" or "varieties." If we are to revert to some such catholic notion of a species, as that of its including within it all those forms which may reasonably be supposed to have descended from a common parent, then all which we have called species in the "red group" of the subgenus *Scutellinia*, would be regarded as varieties of some original *Peziza scutellata* from which, in the course of generations, the others have diverged. The *theoretical* species is that of a family descended from an original typical pair, the *practical* species is founded on comparison of existing differences, which are shared by a group of individuals. The two ideas should not be confounded.

We have in *Peziza scutellata*, L., a small sessile species, ranging from about one-tenth to one-fourth or one-third of an inch in diameter. The exterior covered with rigid, more or less elongated, dark brown hairs. The disc reddish, to bright crimson. Sometimes growing on wood, sometimes on the bare ground. The substance of the cup fleshy, the asci cylindrical, the paraphyses strongly developed, enclosing coloured granules, and the sporidia elliptical, about .002 mm. by .012 mm. in size, with an uncoloured epispore exhibiting a tendency to become granulated.

If we accept this as a sufficient character for the species, then the whole group, of which *P. scutellata* is the centre, constitutes but a single species. By reference to the figures already given (in the work cited) this will be abundantly manifest. If we select only those which have a reddish disc it will be found that they naturally range themselves in two parallel series, in one of which the epispore of the sporidia is smooth, in the other more or less rough. The rough spored series will include *P. miniata*, Fekl., *P. ampullacea*, Limm., *P. geneospora*, B., *P. umbrorum*, Fekl., *P. Texensis*, B., *P. hirta*, Schum., *P. Cubensis*, B. & C., *P. badioberbis*, B., *P. Lusatiæ*, Cke., *P. Margaritacea*, B., *P. vitellina*, Pers. (the only divergence being in its egg-yellow colour), *P. crinita*, Bull (in which the sporidia become brownish when mature), *P. strigosa*, Pers. and *P. labellum*, Pers. Here then we have no less than fourteen species which agree in the epispore of their elliptic sporidia being rough. To these *P. stictica*, B. & C., might be added; although the epispore is described as punctate, this is a point difficult of determination, and the punctate dots resemble depressed warts quite as much as depressed puncta. In fact, analogy leads to the conclusion that, unless the evidence is strong to the contrary, the markings should be regarded as slight elevations rather than depressions.

Of these species—two are Cuban, one Indian, one North American, one Australian, and one common to New Zealand and Ceylon, whilst the remaining nine are European, some of them being common also to other parts of the world. That “species very closely allied to other species have restricted ranges,” is here illustrated by *Peziza Cubensis*, B. & C., *P. Texensis*, B., which appear to be confined to Cuba and Texas, where they represent the European *P. umbrorum*, Fckl. Also in *P. margaritacea*, B., in Australia, and *P. badio-berbis*, B., in New Zealand and Ceylon, as the representatives of *Peziza hirta*, Sch., of Europe. The other exotics are *P. stictica*, B. & C., and *P. geneospora*, B., which have not been found out of Cuba.

Apart altogether from geographical distribution, these species might be compared in all their individual features, but this is scarcely necessary for our present purpose; we may, nevertheless, see how much they accord in respect to average dimensions. These are given below uniformly in millimetres—

	DIMENSIONS.	HABITAT.	LOCALITY.
miniata, Fckl.	... 10-25 mm.	on ground	*Europe.
ampullacea, Lim.	... 15-20 „	„ ground	Europe.
geneospora, B.	... 15-25 „	„ wood	India.
umbrorum, Fckl.	... 6-10 „	„ ground	*Europe.
Texensis, B.	... 5- 6 „	„ ground	Texas.
hirta, Sch.	... 5- 8 „	„ ground	*Europe.
Cubensis, B. & C.	... 3- 6 „	„ wood	Cuba.
badio-berbis, B.	... 5- 7 „	„ wood	Ceylon, N.Z.
Lusatiæ, Cke.	... 5- 8 „	„ wood	*Europe.
Margaritacea, B.	... 5- 7 „	„ wood	Australia.
vitellina, P.	... 5- 6 „	„ ground	Europe.
crinita, Bull.	... 4- 5 „	„ wood	Europe.
strigosa, P.	... $\frac{1}{2}$ - 1 „	„ ground	Europe.
labellum, P.	... 1- 2 „	„ ground	Europe.
stictica, B.	... 6- 8 „	„ ground	Cuba.

There are three large species, which are commonly twice or thrice the size of any of the rest, and two minute species, leaving ten of nearly uniform size, from 3 or 4 to 7 or 8 millimetres in diameter. It cannot be denied that even the widest range, between one and twenty-five millimetres, is by no means impossible for a single species.

The next aspect in which we may review these fifteen species is that of their fructification, usually regarded as one of the most important characters in the diagnosis of a species. As already intimated, the whole of these are characterised by rough elliptical sporidia, ranging between certain approximate limits of size. The relative proportion of the short to the long diameter must, however,

* Also in other parts of the world.

be regarded as more invariable than the absolute dimensions. The latter are given in the following table—

	LENGTH.	BREADTH.
miniata, <i>Fckl.</i>	... ·02- ·022 mm.	·009 mm.
ampullacea, <i>Lim.</i>	... ·022 "	·012 "
geneospora, <i>B.</i>	... ·03 "	·01- ·011 "
umbrorum, <i>Fckl.</i>	... ·02- ·022 "	·018 "
Texensis, <i>B.</i>	... ·022-023 "	·013 "
hirta, <i>Sch.</i>	... ·025 "	·01 "
Cubensis, <i>B. & C.</i>	... ·018-02 "	·011 "
badio-berbis, <i>B.</i>	... ·022-025 "	·012-014 "
Lusatiae, <i>Cke.</i>	... ·025 "	·015 "
Margaritacea, <i>B.</i>	... ·025-027 "	·016-018 "
vitellina, <i>P.</i>	... ·022 "	·015 "
crinita, <i>Bull.</i>	... ·02 "	·012 "
strigosa, <i>P.</i>	... ·02- ·024 "	·01 "
labellum, <i>P.</i>	... ·02 "	·011 "
stictica, <i>B.</i>	... ·016 "	·011 "
Maximum	... ·03 "	·018 "
Minimum	... ·016 "	·009 "
Average	... ·0222 "	·0126 "

The whole relationship of the sporidia of one species to those of another cannot be comprised in a table. By this means we can arrive at the fact that the sporidia of *P. hirta* in their length and breadth bear the proportion of 5 to 2, and in *P. geneospora* nearly of 3 to 1, whilst in *P. umbrorum* it is only 11 to 9; but in the same manner we cannot realize the degree of attenuation towards the extremities, or the greater or less perfection of the elliptical form. Could all these differences result from a modification of an original typical form? Undoubtedly, and unhesitatingly, we must concede that such a circumstance is quite within the limits of possibility; because, although "individual differences generally affect what naturalists consider unimportant parts, yet parts which must be called important sometimes vary in the individuals of the same species." This is especially true with regard to the sporidia in *Peziza*. Undoubtedly they are important parts, and, as a rule, comparatively permanent, but occasionally they exhibit within themselves just those differences which are relied upon as of paramount importance in the separation of species. There is one fact, however, which may to some extent compensate for this admission. Hitherto there has been no indication found of the passage of the perfectly globose sporidia to the short ones of the elliptic type. No link has been found to unite them. *Peziza trechispora*, with its globose sporidia, notwithstanding the similarity of all other features, is removed by this one all-sufficient character, if by no other, from the fifteen species which we have enumerated. If all the said fifteen, and the seven others hereafter

named, were united as one species, *P. trechispora* would still remain outside as an independent type.

If we compare also with the series having rough sporidia those in which the sporidia are smooth, but with the external features of the cups the same as in the rough spored series, we find the following representatives :—

	DIMENSIONS.	HABITAT.	LOCALITY.
scutellata, <i>L.</i>	... 5- 8 mm.	on wood	*Europe.
setosa, <i>N.</i>	... 5- "	„ wood	Europe.
Kerguelensis, <i>B.</i>	... 12-18 "	„ ground	{ N. Zealand and Kerguelen.
carneo-sanguinea, <i>Fckl.</i>	2- 5 "	„ ground	Europe.
Sequoia, <i>Phil.</i>	... 5- "	„ twigs	California.
umbrata, <i>Fr.</i>	... 5- 6 "	„ ground	*Europe.
lentiformis, <i>P.</i>	... $\frac{1}{2}$ - 1 "	„ ground	Europe.

Of the seven species only two are exotic; the residue are European. One species is large, and analogous to *P. miniata*. One species is minute, and analogous to *P. strigosa*. The remaining five species are of a medium size. The only one which exhibits any departure from the usual habitats is *P. sequoia*, which occurs on the dead foliage and twigs of *Sequoia* in California. Were it not for the sporidia being smooth, all of these, except *P. umbrata*, might be referred to rough spored types. The link which unites them is *P. scutellata*. The following are the measurements of the sporidia :—

	LENGTH.	BREADTH.
scutellata, <i>L.</i>	... .02- .022 mm.	.011-.013 mm.
setosa, <i>N.</i>	... .02 "	.01 "
Kerguelensis, <i>B.</i>	... .023-.025 "	.017-.02 "
carneo-sanguinea, <i>Fckl.</i>	... .02 "	.01 "
Sequoia, <i>Phil.</i>	... .017-.02 "	.012-.013 "
umbrata, <i>Fr.</i>	... .018 "	.009 "
lentiformis, <i>P.</i>	... .019 "	.01 "
Average	... .02 "	.012 "

The average size is very nearly the same as in the rough spored series.

The only important point which arises in respect to this group, and its relationship to the preceding one, is that of the rough or smooth epispore of the sporidia. It has generally been considered, and with some reason, that the character of the epispore is a tolerably safe guide. When we speak of permanence in relation to any organ, it must be always understood in a modified sense. There is no absolute permanence, and to characterise the roughness or smoothness of the epispore as a good permanent character, means only that it is comparatively permanent, or as much so as in the most stable of vegetable organs. For all practical purposes

the roughness or smoothness of the epispore, in the mature sporidium, is accepted as a satisfactory independent basis for the establishment of a species. That of two individuals, agreeing in every other particular, the one of which has smooth and the other rough sporidia, this feature has been held sufficient for their recognition as distinct species. It is, perhaps, a condition seldom realised, of perfect identity in every point save one, and yet, in such an extreme case, it is doubtful if any valid objection would be urged to the acceptance of the epispore as final. The same could not be safely affirmed of any other character. It is the only one on which general reliance would be placed. In the face of this strong evidence there would appear to be an insuperable barrier to regarding the seven species last named as continuous with the first series of fifteen; and yet evidence may be produced to prove that in one of the most common of smooth spored species, unmistakable transitions may be found. We have examined specimens of *Peziza scutellata* from localities widely apart, from Great Britain, several European countries, North America, and other parts of the world, and observed with interest the modification of the epispore from a perfectly smooth surface, through minute granulation to a most decided warted surface. If it should be urged in opposition to this fact, that, according to admission already made, the roughness of the spore is an efficient character, and that the rough spored and smooth spored *P. scutellata* are distinct species, in reply we contend that we have found the same two forms growing side by side, and further, the same two forms co-existing in the same individual. The appearance of sporidia having a smooth epispore in an individual *Peziza*, the mature sporidia of which are rough, may be explained by the fact that immature sporidia do not exhibit the roughness which is characteristic of them when fully mature. Those who have had any extended experience in the examination of the hymenium of *Peziza* are aware that it is often with extreme difficulty that immature sporidia can be forced out of the asci in which they are generated, and that rough sporidia acquire their roughness before they leave the ascus. It is reasonable, therefore to assume that free sporidia, which have voluntarily left their asci and are still smooth, are likely to remain so, such being their normal condition. When free sporidia, with a smooth epispore, are encountered in the hymenium of a *Peziza* and at the same time also sporidia with a rough epispore, either enclosed in asci or free, it may fairly be assumed that both are the production of the same individual. There is one other aspect in which this phenomenon may be contemplated. It may be objected that, after all, *Peziza scutellata* is not a smooth spored species when fully matured under favourable conditions. That longer time, or certain other circumstances are essential for the perfection of the sporidia, which only occasionally, and under exceptional conditions, attain their highest state of perfection with a rough epispore. To this

we can only urge in reply that we have arrived at the conclusion that *P. scutellata* may be an exceptional species, but, at any rate, although usually the epispore is smooth, it has the power, under certain circumstances, of producing sporidia with a rough epispore. Unless we are much mistaken, although we have no notes to refer to, this is not an isolated instance. There is an impression that *Peziza gregaria* Rehm., which is not uncommon in England, has with us smooth sporidia, but that both Mr. Phillips and myself have examined Continental specimens, in one instance, with a rough epispore. The *Peziza*, and its sporidia, are scarcely to be confounded with any other species.

It is of but little consequence whether we call these twenty-two forms of *Peziza* so many varieties of one type, or give them names and call them twenty-two species, they have an undoubted close relation with each other, so close that it requires but little hesitation to confess that they may all be descended from some original *Peziza scutellata*, within the limits of historic times. Without the use of the microscope, it is doubtful whether even to Linnæus himself they would have appeared as any other than *Peziza scutellata*.

What shall we say of parts having a less permanent character than the sporidia, such as the appendages of the external surface? We know well enough what is the general feeling amongst botanists as to the pubescence of leaves, but mycologists have not yet attained to the same impression as to the woolliness of the perithecium in *Sphæria* or the hairy external surface of the cup in *Peziza*. In some cases this pubescence is very fugitive, delicate, and, in our opinion, of little or no classificatory value. In others, and particularly in the group under notice, the hairs are most pronounced, highly-developed, numerous, persistent, and deeply-coloured. Yet if we will follow them from the most highly-developed of half-a-millimetre in length, to the small short hairs of *Peziza Texensis*, we shall find a gradation terminating in what are no more than the hair-like prolongations of the external cells of the cup. Through this simplest form *Peziza Chateri*, Sm. is the link that unites the naked red *Pezizæ* of terrestrial habits with the section of *Scutellinia*. Through *Peziza Chateri* and *P. macrocystis* we enter another compact group, but with less startling affinities than those which we have reviewed in detail.

If it were necessary to illustrate still further our views with regard to certain groups of closely-related species, we might indicate *P. stercorea*, P., *P. alpina*, Fckl., *P. coprinaria*, C., and *P. scubalonta*, C. and G., with their relations to *P. Dalmeniensis*, C., *P. theleboides*, A. and S., and other allies. And in addition thereto that section which we have called *Sepultaria*, having as types such species as *P. sepulta*, Fr., and *P. arenosa*, Fckl. Already our remarks have reached the extreme limits of our space, and hence we must commend our imperfect observations to the consideration of all those who are specially interested in this subject.

DESCRIPTIONS OF PLATES 131, 132, 133.

Plate 131, illustrating Dr. Quelet's Fungi of the Jura :—

- Fig. 1. *Hydnum amicum*, Q.
- „ 2. *Pluteus tenuiculus*, Q.
- „ 3. *Tuber fulgens*, Q.
- „ 3a. *Rhizopogon suavis*, Q.
- „ 4. *Peziza ampelina*, Q.
- „ 5. *Helotium sulfurinum*, Q.
- „ 6. *Helotium stagnale*, Q.
- „ 7. *Mollisia opalina*, Q.
- „ 8. *Ascophanus ruber*, Q.
- „ 9. *Phialea lilacea*, Q.
- „ 10. *Lachnella lactea*, Q.
- „ 11. *Mollisia mitralis*, Q.

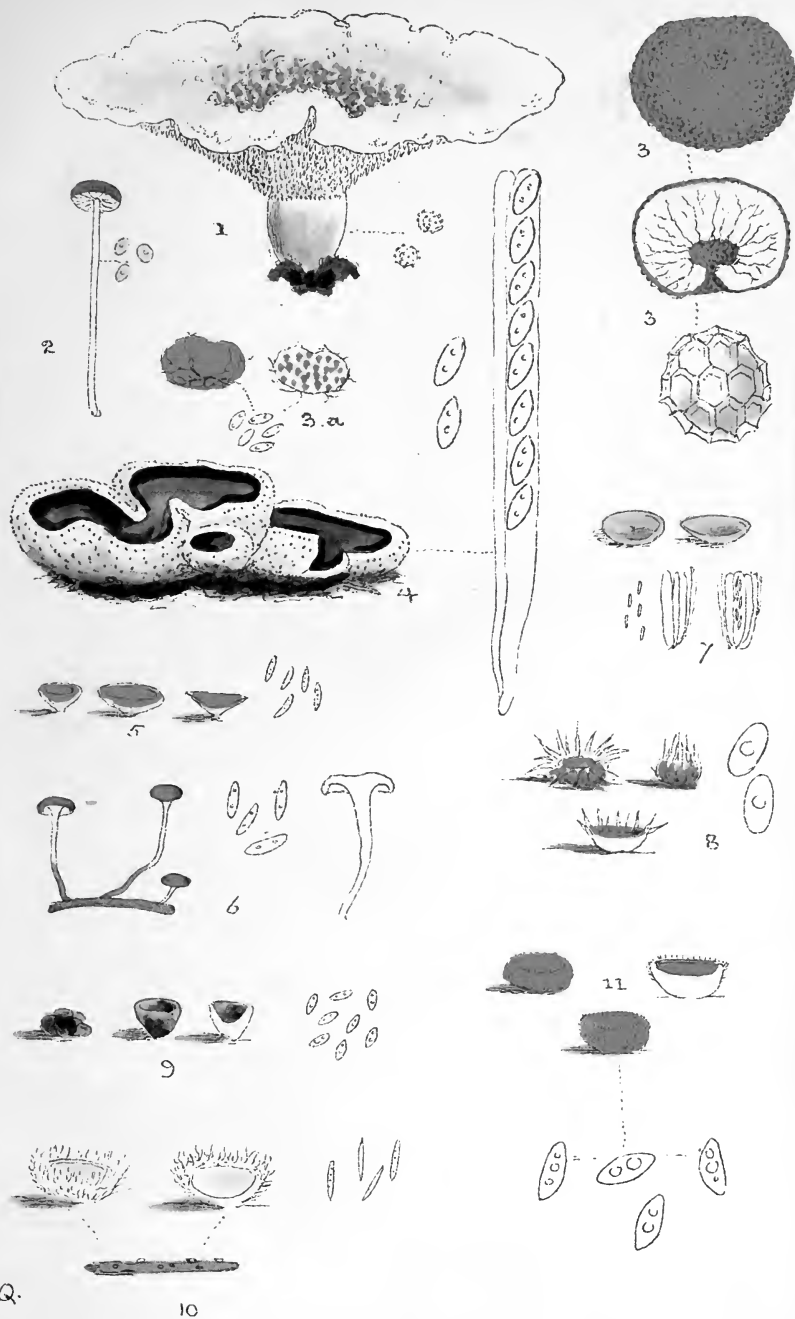
Plates 132 and 133, illustrating New Zealand Fungi, see page 54 :—

- Figs. 1-2. *Cantharellus umbriceps*, Cke.
- „ 3-4. *Polyporus salpinctus*, Cke.

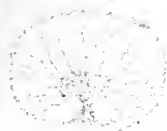
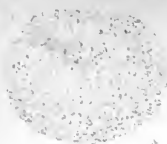
Mesopus, minimus. Pileo campanulato, vel tubæformi, umbrino, demum atro-umbrino, glabro, subnitido, striato; margine sublacerato, reflexo; stipite gracili, elongato, concolori, subvelutino; poris irregularibus, subangulatis, pallidioribus, brevibus; margine lacerato-dentatis.

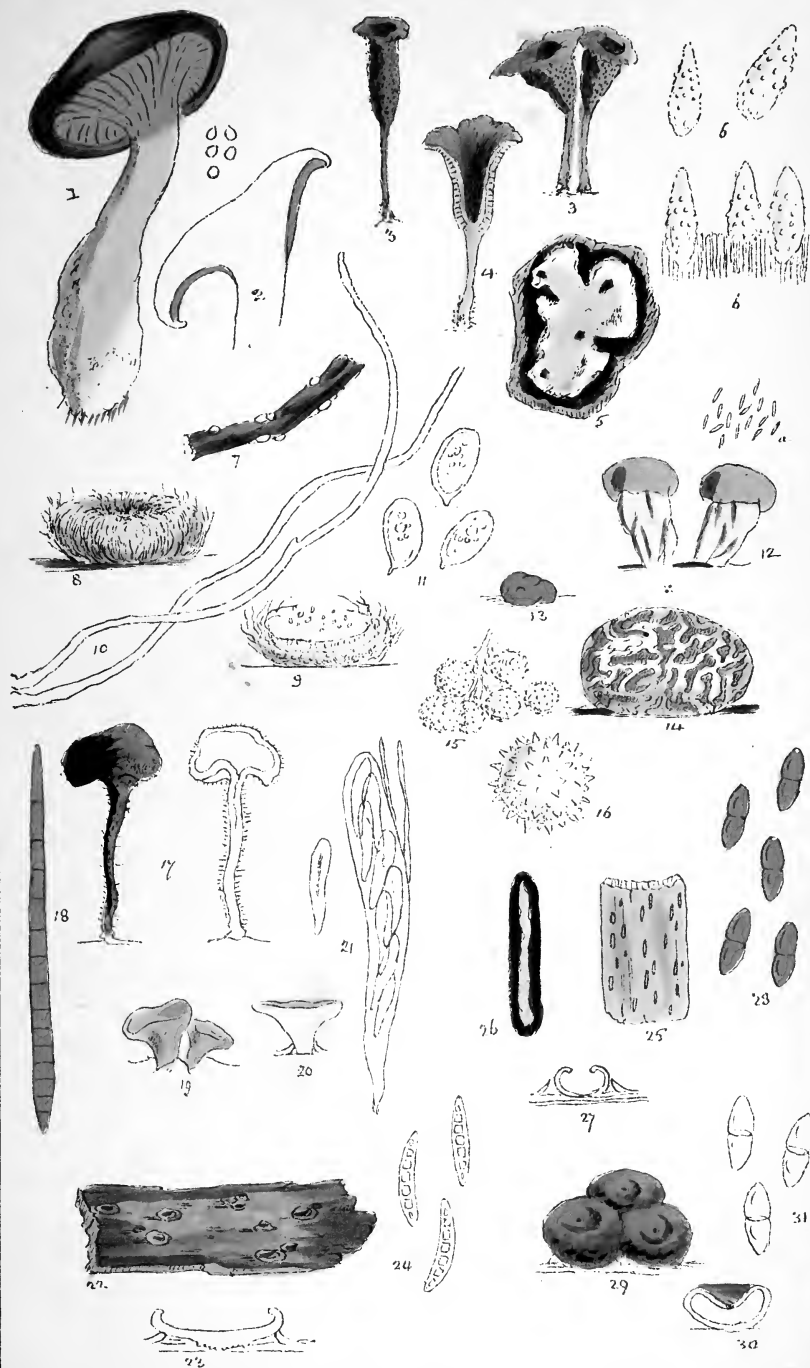
On dead wood. Bay of Islands, New Zealand. (Dr. Berggren.)
A very curious little species, from one inch high, figured natural size.

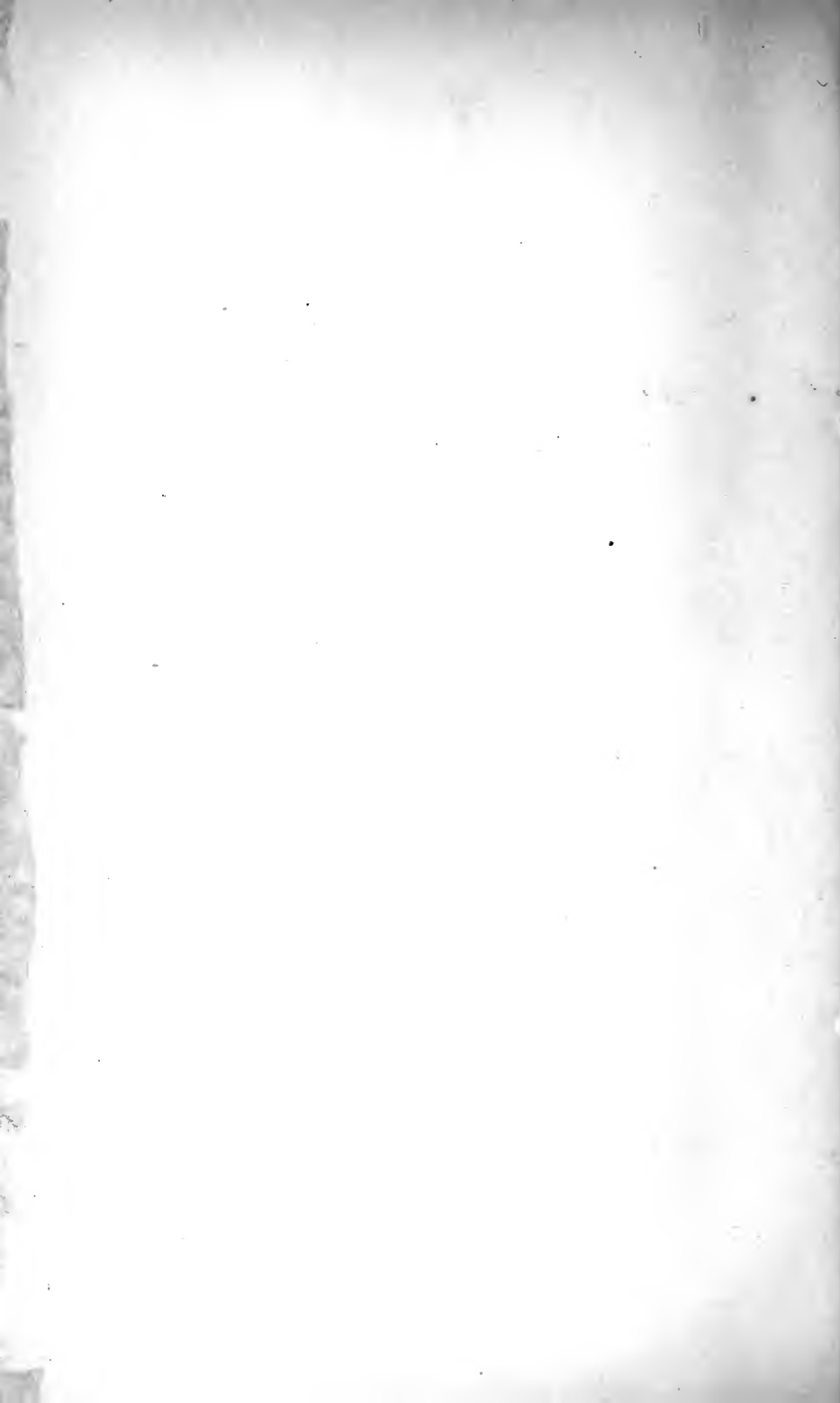
- Fig. 5. *Peniophora crustosa*, Cke.
- „ 6. Metuloids from hymenium of the same.
- „ 7. *Cyphella Zealandica*, C. & Phil., natural size.
- Figs. 8, 9. Cup enlarged, with section.
- Fig. 10. External hairs.
- „ 11. Spores $\times 400$.
- „ 12. *Coryne sulcipes*, Cke., enlarged
- „ 13. *Paurocotylis echinosperma*, Cke., natural size.
- „ 14. Section of same, magnified.
- „ 15. Spores magnified 400 diam.
- „ 16. Spore further magnified.
- „ 17. *Geoglossum hirsutum*, var. *leotioides*, natural size.
- „ 18. Sporidium of same $\times 400$.
- „ 19. *Helotium phormium*, Cke.
- „ 20. Section of cup.
- „ 21. Ascus and sporidia of *Helotium phormium*, Cke.
- „ 22. *Dermatea fumosa*, C. & Phil., natural size.
- „ 23. Section of cup enlarged.
- „ 24. Sporidia $\times 400$.
- „ 25. *Hysterium phormigenum*, C. & Phil., natural size.
- „ 26. *Perithecium* enlarged.

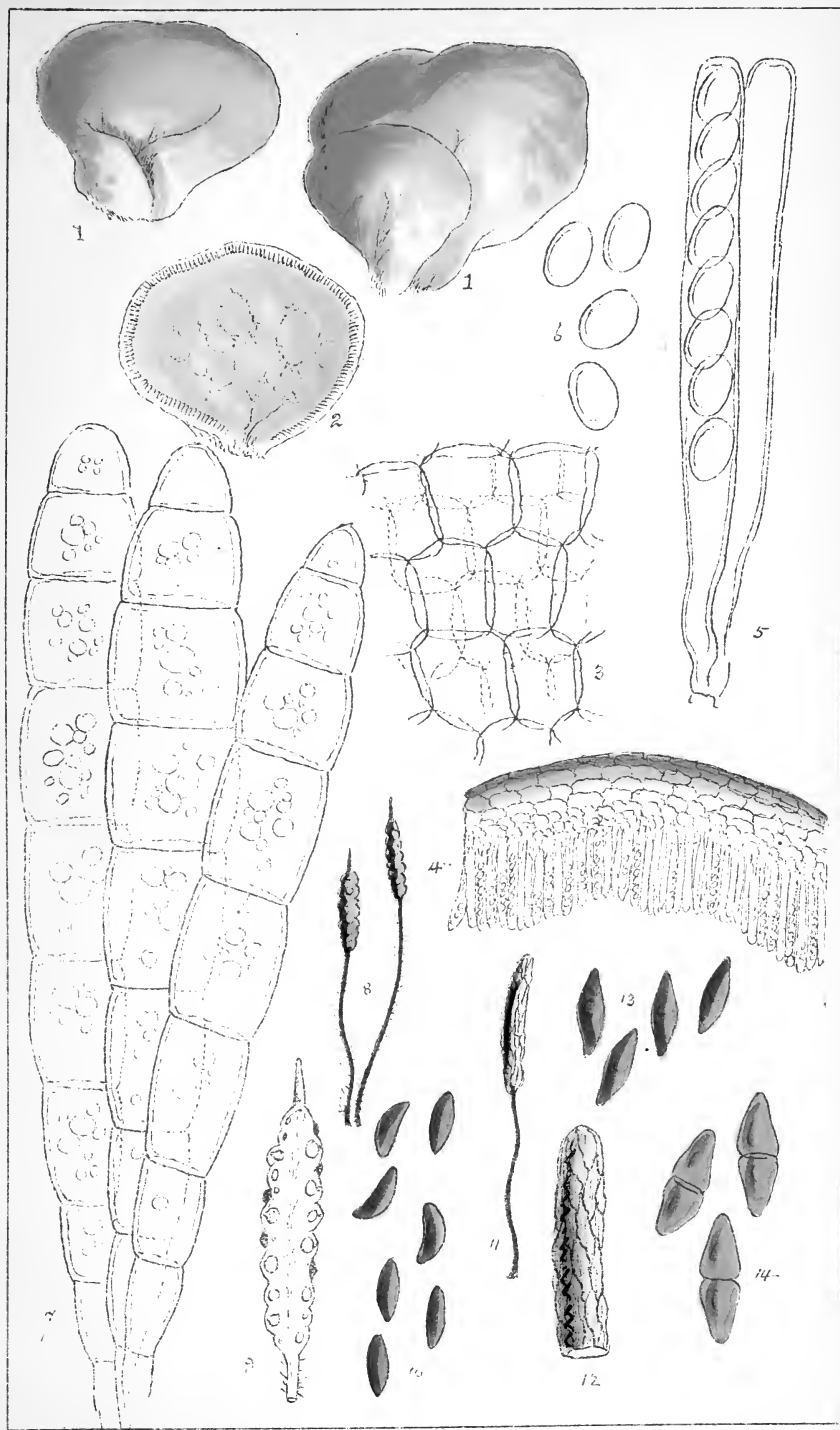


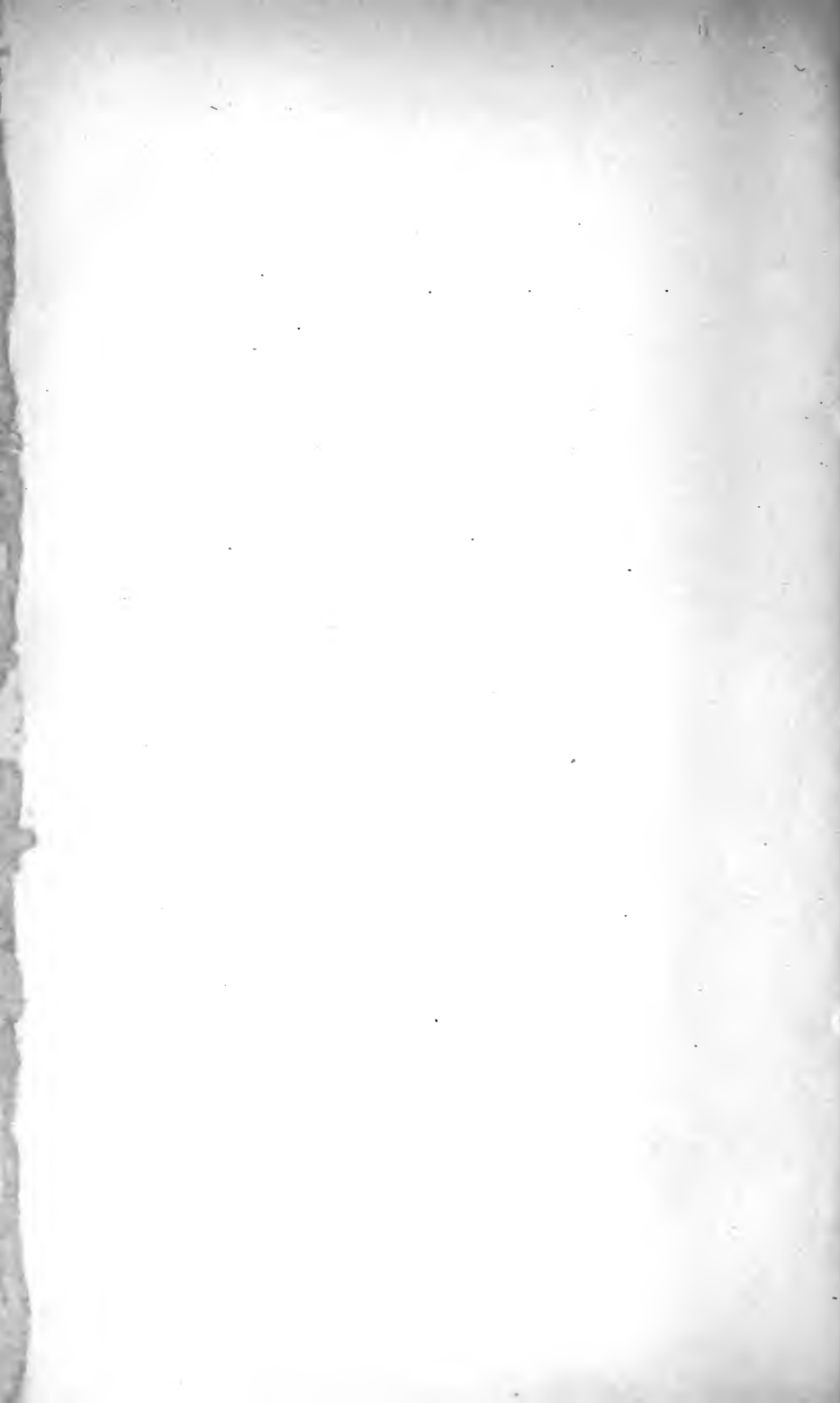
1. *Hydnum amicum* Q. 2. *Pluteus tenuiculus* Q. 3. *Tuber fulgens* Q.
 3a. *Rhizopogon suavis* Q. 4. *Peziza ampelina* Q. 5. *H. sulfurinum* Q.
 6. *H. stagnale* Q. 7. *Mollisia opalina* Q. 8. *Ascobolus ruber* Q.
 9. *Phialea lilacea* Q. 10. *Lachnella lactea* Q. 11. *Mollisia mitralis* Q.











- Fig. 27. Section of same, transverse.
 „ 28. Sporidia of *Hyst. phormigenum* $\times 400$.
 „ 29. Perithecia of *Nectria Zealandica*, Cke., enlarged.
 „ 30. Section of same.
 „ 31. Sporidia $\times 400$.

Plate 133—

- Fig. 1. *Berggrenia aurantiaca*, Cke., natural size.
 „ 2. Section of same.
 „ 3. Cells of exterior $\times 400$.
 „ 4. Section of pileus, with hymenium on the inner surface, magnified.
 Figs. 5, 6. Asci and sporidia $\times 400$.
 Fig. 7. Spores of *Bactridium magnum* $\times 400$.
 „ 8. *Xylaria apiculata*, Cke., natural size.
 „ 9. Section of capitulum enlarged.
 „ 10. Sporidia $\times 400$.
 „ 11. *Xylaria Zealandica*, Cke., natural size.
 „ 12. Portion of capitulum enlarged.
 „ 13. Sporidia $\times 400$.
 „ 14. Sporidia of *Massaria australis*, Cke. $\times 400$.

REPLY TO DR. M. C. COOKE'S CRITICISM OF PAPER
 ON "VARIABILITY OF SPHÆRIA QUERCUM, SZ."

By J. B. ELLIS.

In the last number of "*Grevillea*," the editor of that Journal makes some statements with regard to my paper on *Sphæria Quercum*, published in the "Proceedings of the Academy of Natural Sciences of Philadelphia" last March, which need correction. He says, "It matters not that the sporidia vary in size and form, that in some (of the species) they should be obtuse, in others rather acute at the extremities, in some hyaline, in others deep brown." Dr. Cooke, who has examined the specimens, must have known that these various forms of sporidia instead of being characteristic of different species are all to be found in the same perithecium, the narrow and acute forms being in fact only young or imperfect. As to the sporidia being "hyaline in some and in others deep brown," the record in "*Grevillea*" contradicts that statement, so far at least as the species of C. and E. are concerned, *Melogramma Aceris* alone excepted; and even in this species my specimens have the sporidia hyaline. *S. eriostega* is also said to have the sporidia brown and biseptate; but it is added that these were free spores, the sporidia actually observed in the asci being hyaline. In my previous paper I stated, and subsequent observations has confirmed the statement, that brown biseptate spores are

found in *all* the different forms, but as yet not in asci. They occur but sparingly it is true, but a careful and patient search is sure to reveal their presence. I wish here to amend my original statement so far as the colour of the sporidia is concerned. In all fresh specimens examined, the sporidia are hyaline. Some specimens on *Quercus alba* and on *Vaccinium Pennsylvanicum*, both of which had been poisoned, have brown sporidia, but as the colour may be due to the action of the poison, it will be safer to assume that the sporidia are hyaline till the examination of fresh and living specimens shall show them to be brown.

It is asked why twenty other specimens having similar sporidia were excluded from the list? Simply because I had not actually examined specimens of these species, and it was not intended to give mere opinion, but to state facts actually observed. As to "ignoring all variations of internal structure" and "discarding all external features," I am willing to let the specimens speak for themselves.*

* I intended to add to the original paper a foot note, designating all the forms with perithecia not united in a stroma *var. simplex*, but as no other additions could be made after the article was in type, I was obliged to content myself with adding this note with pen and ink to the copies sent me for distribution. (*Reprinted from Proc. Acad. Soc., Phil.*)

NOTE TO THE ABOVE.—I have printed this "reply" in fairness to the writer, but I do not purpose to continue the controversy, which, in common with others of a similar nature, would only tend to foster ill-feeling, and be of no interest to the public at large. Mr. Ellis has an undoubted right to the opinions he has professed, and a foregone conclusion would not be shaken by any evidence which I might offer. The type specimens are still in my possession, as well as original preparations of the fructification, and analytical drawings of all the species, so-called. In time these will find a place in some public institution, where they may be consulted by all concerned in the subject. I am quite content to wait and abide by the verdict of unbiassed judgment. My opinion rests upon the identical specimens which I have examined, and on no others. I much regret any difference of opinion between myself and Mr. Ellis; and as this difference relates to species published in our joint names (in many instances), but which Mr. Ellis thought fit to impugn, it became my duty to accept his judgment as publicly as he had made his criticisms, or, if I could not do this, to utter my protest. The latter course is the one which I followed, and with that I am now content to abide. Controversies of this kind are interminable, great consumers of time, and seldom profitable to any one. It is with no disrespect to Mr. Ellis that I decline his challenge, but I find time all too short for working purposes to be wasted in fruitless discussion.

M. C. COOKE.

ON HYMENOCHÆTE AND ITS ALLIES.

By M. C. COOKE.

The genus *Hymenochæte* was established by Leveillé for the reception of all those species, previously included in *Stereum*, which bore on the Hymenium coloured rigid setæ. We alluded to this genus when writing of *Peniophora*, and proposed to enumerate the species which had come under our observation. The following are all the genuine species we have examined :—

* MESOPUS.

1. ***Hymenochæte reniformis***, (Fr.), *Lev. Ann. Sci. Nat.*, v. 1846, p. 151.
In Brazilian specimens, setæ attenuated to an obtuse apex, .07 to .1 mm. long, and from .014-.02 mm. diameter at base.

var. ***damæcornis***, *Lev.*

Hymenochæte damæcornis, *Lev. Ann. Sci. Nat.*, v., 1846, p. 151.

In Cuban specimens, setæ long and slender, .1-.12 × .01 mm.

In St. Domingo specimens, setæ more robust and acute, .05-.06 × .012-.015 mm.

Evidently the setæ are very variable, and profuse in all the forms in this species.

St. Domingo, Cuba, Venezuela, Brazil.

** APUS.

2. ***Hymenochæter ubiginosa***, (Schr.), *Lev. Ann. Sci. Nat.* 1846, p. 151.
Stereum rubiginosum, Fr. *Hym.*, p. 641.
Setæ long and slender, .1 × .005 mm.
Europe, U. States, India, Tasmania.

3. ***Hymenochæte tabacina***, (Fr.), *Lev. Ann. Sci. Nat.* 1846, p. 151.
Stereum tabacinum, Fr. *Hym.*, p. 641.
Setæ robust, .07 × .012-.014 mm., sometimes .08 × .015 mm.
Europe, Arctic America, U. States.
Stereum striatum, Fr., sometimes quoted as of this genus, has no setæ, and is not a *Hymenochæte*.

4. ***Hymenochæte Boltoni***, (Sacc.)
Stereum Boltonii, Sacc. *Michelia*, i., p. 239.
Setæ clavate, attenuated at the base, .07-.08 × .01-.011 mm., smaller in resupinate form.
Europe.

5. ***Hymenochæte crocata***, (Fr.), *Berk.*
Stereum crocatum, Fr. *Hym.*, p. 641.
Setæ robust, .08 × .012 mm.
Europe, United States.

6. ***Hymenochæte rheicolor***, (Mont.), *Lev. Ann. Sci. Nat.* v. (1846), p. 151.
Setæ slender, .1 × .006 mm.
India.

* * RESUPINATUS.

20. **Hymenochæte fuliginosa**, (Lev.), Berk. in *Cuban Fungi*, No. 429.
Thelephora ulmicolor, B. & Br.
 Setæ often sparse, $\cdot 035 \times \cdot 006$ mm., occasionally attaining $\cdot 05 \times \cdot 008$ mm.
 Europe, Cuba, Ceylon, Venezuela.
21. **Hymenochæte cinnamomea**, (Fr. ?)
Corticium cinnamomeum, Fekl. *Fungi Rhen.*, No. 2613.
 Setæ fusiform, $\cdot 12 \times \cdot 007\text{--}\cdot 008$ mm.
 Europe.
22. **Hymenochæte corrugata**, Berk. *Outl.* p. 272.
Corticium corrugatum Fr. *Hym.*, p. 656.
 Setæ rather obtuse, $\cdot 06 \times \cdot 008$ mm.
 Europe, United States.
23. **Hymenochæte Mougeotii**, (Fr.)
Corticium Mougeotii, Fr. *Hym.*, p. 654.
 Setæ acute, $\cdot 06 \times \cdot 008$ mm.
 Europe.
24. **Hymenochæte corticolor**, B. & Rav. in *North. Am. Fungi*, No. 244.
 Setæ acute, $\cdot 08 \times \cdot 008$ mm.
 United States.
25. **Hymenochæte floridea**, B. & Br. *Journ. Linn. Soc., Ceylon Fungi*, No. 619.
 Setæ acute, numerous, $\cdot 05 \times \cdot 008$ mm.
 Ceylon.
26. **Hymenochæte cervina**, B. & C. in *North Am. Fungi*, No. 243.
 Setæ slender, acute, $\cdot 09 \times \cdot 007$ mm.
 U. States, Cuba.
27. **Hymenochæte dura**, B. & C. in *Cuban Fungi*, No. 422.
 Setæ small, pointed, $\cdot 03 \times \cdot 005$ mm.
 Cuba.
28. **Hymenochæte depallens**, B. & C. in *Ceylon Fungi*, No. 616.
 Setæ sparse $\cdot 1\text{--}\cdot 12 \times \cdot 008$ mm.
 Ceylon.
29. **Hymenochæte epichlora** (B. & C.)
Corticium epichlorum, B. & C. in *North Amer. Fungi*, No. 258.
 Setæ sparse and delicate, $025\text{--}03 \times \cdot 004$ mm.
 United States.
30. **Hymenochæte ambiens**, B. & C. in *Herb. Berkeley.*
 Setæ slender, $\cdot 09 \times \cdot 006\text{--}\cdot 007$ mm.
 New Jersey (U.S.).
31. **Hymenochæte Berkeleyana** (Mont.), Berk.
Stereum Berkeleyanum, Mont. *Syll.*, p. 178.
 Setæ few and brittle, $\cdot 06 \times \cdot 01$ mm.
 Cayenne.
32. **Hymenochæte pellicula**, B. & Br. *Ceylon Fungi*, No. 618.
 Setæ acute, $\cdot 033\text{--}\cdot 05 \times \cdot 004$ mm.
 Ceylon.

33. **Hymenochæte unicolor**, Berk. and Curt. in *Cuban Fungi*, No. 431.
Setæ unusually slender, $\cdot 07 \times \cdot 003$ mm.
Cuba.
34. **Hymenochæte leonina**, B. & C. *Cuban Fungi*, No. 423.
Setæ rather acute, $\cdot 07 \times \cdot 01$ mm.
Cuba.
35. **Hymenochæte crassa** (Lev.) Berk. in *Herb.*
Substance soft and spongy. Setæ clavate, attenuated at the base, $\cdot 13 \times \cdot 013$ mm.
36. **Hymenochæte umbrina**, B. & C. in *Herb.*
Stereum umbrinum, B. & C., N. Amer. *Fungi*, No. 240.
Substance soft and spongy. Setæ clavate, attenuated at the base, $\cdot 04 \times \cdot 01$ mm.
United States.
37. **Hymenochæte fulvella**, B. & C. in *Herb.*
Setæ robust, fasciculate, $\cdot 09 \times \cdot 018$ mm.
Venezuela.
38. **Hymenochæte insularis**, B. & C. in *N. A. Fungi*, No. 245.
Stereum insulare, Berk. in *Herb.*
Setæ subacute, $\cdot 04\text{--}\cdot 05 \times \cdot 008$ mm.
United States.
39. **Hymenochæte rhabarbarina** (Berk.)
Corticium rhabarbarinum, Berk. in New Zealand Flora.
Setæ sub-conical, $\cdot 028\text{--}\cdot 03 \times \cdot 008\text{--}\cdot 009$ mm.
New Zealand.
40. **Hymenochæte Stevensoni**, B. & Br. in *Ann. Nat. Hist.* xv. (1879),
p. 211, No. 1817.
Setæ pallid, $\cdot 03\text{--}\cdot 04 \times \cdot 006$ mm.
Great Britain.

The forms included above as resupinate may also in some instances become reflexed. The sub-division must not therefore be regarded as absolute.

Sub-genus. *VELUTICEPS*, Cke.

Hymenium velvety with coloured flexuous hairs, usually collected in fascicles.

This has an entirely different structure from either *Hymenochæte* or *Peniophora*. The slender flexuous hairs are collected in conical tufts, which grow directly from the substratum of the hymenium, and are persistent; whilst the bodies in *Peniophora* and the setæ in *Hymenochæte* are but slightly attached to the hymenium, and fall out readily when the hymenium is old. We have included these forms as a subgenus, under *Hymenochæte*, although with a preference for considering them worthy of rank as a separate genus, equally with *Hymenochæte* and *Peniophora*.

The smaller section, with the hymenial hairs scattered, approaches nearest to *Hymenochæte*. The larger section, with the hairs in fascicles, represents our idea of the subgenus.

Sect. i. *Hymenial hairs scattered.*1. **Hymenochæte (Veluticeps) Archeri** (Berk.)*Stereum Archeri*, Berk. in Flora of Tasmania.Hairs dense, sub-flexuous, $\cdot 06 \times \cdot 005$ mm.

Tasmania.

2. **Hymenochæte (Veluticeps) vinosa** (B.)*Corticium vinosum*, Berk. in Herb.Hairs acute, sub-flexuous, $\cdot 08 \times \cdot 006$ mm.

Australia.

Sect. ii. *Hymenial hairs in fascicles.*3. **Veluticeps Berkeleyi**, Cke.*Hymenochæte veluticeps*, B. & C. in Cuban Fungi, No. 415.Tufts of flexuous brown hairs, about $\cdot 15$ - $\cdot 2$ mm. high.

Cuba.

4. **Veluticeps hispida** (B.), Cke.*Hymenochæte hispida*, Berk. in Herb.Tufts of flexuous hairs honey-coloured, about $\cdot 18$ mm. high.5. **Veluticeps setosa** (B.), Cke.*Hymenochæte setosa*, Berk. in North Amer. Fungi, No. 246.Tufts of flexuous hairs, dark brown, about $\cdot 16$ - $\cdot 18$ mm. long.

Fascicles of smaller diameter at the base than in preceding species.

United States.

6. **Veluticeps crocicreas** (B. & Br.), Cke.*Hymenochæte crocicreas*, B. & Br. in Journ Linn. Soc. xiv., p. 615.Fascicles of hairs very short and conical, about $\cdot 05$ mm. long.

Ceylon.

SPECIES EXCLUDED.

Hymenochæte noxia, Berk. in Herb. Substance wholly fibrous, without setæ. Samoa.*Hymenochæte agglutinans*, Ellis. No setæ found in any authentic specimens examined. United States.*Hymenochæte Carteri*, Berk. in Herb. No setæ. Substance spongy. The only specimen is poor, and partly destroyed by insects. Spores oval, amber-coloured, $\cdot 007 \times \cdot 005$ mm. Bombay.*Hymenochæte leprosa*, Lev. Ann. Sci. Nat. v. (1846), p. 152. In the only authentic specimen, no setæ found. United States.*Hymenochæte conspurcata*, B. & C. in Herb. No setæ found in the type specimen. Venezuela.*Hymenochæte frustulosa*, B. & C. in Cuban Fungi, No. 428. No setæ found in authentic specimens. Cuba.*Hymenochæte siparia*, B. & C. in Cuban Fungi, No. 424. No setæ found in original specimens. Cuba.*Hymenochæte muscicola*, B. & C. in Cuban Fungi, No. 425. No setæ; probably a resupinate *Thelephora*. Cuba.

Hymenochæte tomentosa, B. & C. in Cuban Fungi, No. 430. No setæ found, only a loose fibrous structure. Cuba.

Hymenochæte ramealis, B. & Br., Ceylon Fungi, No. 611. The type specimens resemble *Hymenochæte* in habit, but are without setæ. Ceylon.

Hymenochæte Ellisii, B. & Cke. in Grevillea = *Corticium* (*conioophora*) *Ellisii* (B. & C.), in Grevillea.

Hymenochæte dendroidea, B. & Br. in Ceylon Fungi, No. 620. = *Thelephora dendroidea*, Cke.

Hymenochæte vibrans, B. & C. in Herb. No setæ = *Stereum vibrans*, B. & C. in Cuban Fungi, No. 404.

Hymenochæte racodivum, B. & C. in Herb. No setæ = an effused *Thelephora*. United States.

The following additions should be made to our previous enumeration of the species of *Peniophora*. See "Grevillea," Vol. viii., p. 17.

17. ***Peniophora dissita*** (*Berk.*)

Stereum dissitum, Berk. N. Amer. Fungi, No. 241.

Metuloids obclavate, obtuse, verrucose, $\cdot 09\text{--}\cdot 1 \times \cdot 025\text{--}03$ mm. Texas (U.S.)

18. ***Peniophora paupercula*** (*B. & C.*), Cke.

Hymenochæte paupercula, B. & C. Cuban Fungi. No. 426.

Metuloids of hymenium conical, verrucose, hyaline, $\cdot 025\text{--}\cdot 027 \times \cdot 012$ mm. Cuba.

19. ***Peniophora crustosa***, Cke. in Grevillea viii., p. 56.

Metuloids obclavate, rough, $\cdot 04 \times \cdot 015$ mm. New Zealand.

DESMIDS NEW TO ENGLAND.—The following species have been found for the first time in England:—

Sphærozozma secedens, *DeBary.* } At Snarebrook, Essex.

Closterium linea, *Perty.* }

Cosmarium læve, *Rabh.*, var. ***septentrionale***. In Holloway, Middlesex.

RAMULARIA CRYPTOSTEGIÆ. *Pim*, nov. sp.—Forming a very delicate snow-white bloom on decaying seeds of *Cryptostegia*, in a stove at Monkstown, Co. Dublin. Threads well developed, simple or slightly branched, spores large, oblong-cylindrical, rounded at the ends, about $\cdot 03\text{--}\cdot 04 \times \cdot 006\text{--}\cdot 007$ mm., with one to three very delicate septa, inserted on the extremities of the threads. March, 1880.

GREENWOOD PIM.

HEREFORD FUNGUS FORAY.—The date fixed for this annual fête is Thursday, October 7th. The assembling will, of course, commence as usual on the preceding Monday, October 4th.

FUNGI OF AUSTRALIA.

I. BASIDIOMYCETES, BY C. KALCHBRENNER.

The species, of which the following are descriptions, will be illustrated by plates in a succeeding part of this Journal, when the descriptions will be given of other species in order. The specimens, except where otherwise stated, were communicated by Baron Ferd. Müller, K.M.G.

Agaricus (Collybia) eradicatus, *Kalch. in litt.*

Ag. radicato statura, stipite procero, sulcato, etc., simillimus sed nec radicatus, nec ad basim incrassatus.

On the ground. Richmond River, N. S. W. (M. Hodgkinson).

Agaricus (Mycena) trachycephalus, *Müll. & Kalch.*

Fascicularis. Pileo pisi magnitudine, subglobosi demumve campanulati, papillati, rugoso-striati, umbrini; stipites filiformes, 1-2 pollicares, basi coalito, ibidemque villosi, ceterum glabri, pileo dilutiores; lamellæ adscendentes, subdistantes, simplices, angustæ, helvolæ.

On wood. Mount Macedon. (Müller).

With the habit of *M. cohærens*, but smaller and tougher.

Agaricus (Omphalia) pumilio, *Kalch.*

Pileus membranaceus, convexus, umbilicatus, radiatim striatus, glaber, cervinus; stipes fistulosus, tenuis, breviusculus, curvato-decurrentibus, angustis, subconfertis, pileo pallidior.

On wood. Richmond River, N. S. W. (M. Hodgkinson).

Pileus 3-4 lines broad. Stem 3-5 lines long. Allied to *Ag. rusticus*, Fr.

Agaricus (Pleurotus) lenticula, *Kalch.*

Pusillus, dorso adnatus, orbicularis, planus (1-3 mm. diam.), nudiusculus, olivaceo-fuscescens, vel albidio pulverulentus, lamellis linearibus, simplicibus, confertis, in puncto sub-excentrico concurrentibus, olivaceo-fuscis.

Rockhampton. (Müller).

Allied to *Ag. applicatus*, Batsch., with the pileus reflexed and gills lax.

Agaricus (Pleurotus) læticolor, *Kalch.*

Pileus carnosulus, excentricus, convexus, obtusissimus, margine involutus, lævis, glaber, aureus; stipes faretus, æqualis, nudus, cum lamellis emarginato-adnatis, confertis, ventricosis, carneis. (Sporarum color ignotus).

On wood (?) Richmond River, N. S. W.

Pileus 1-1½ cm. broad. Stem equal or longer, 1 mm. thick Of doubtful affinity.

Agaricus (Pleurotus) luteo-aurantius, *Kalch.*

Pileo carnosulo, orbiculari, convexo, obtuso, lævi, nudo, luteo-aurantio; stipite fistuloso, tenui, brevi, tenaci, curvato-adscendente, lævi, pulverulento, rufo, ad basim bulbillosam albo-floccoso-farinoso; lamellis adnatis, decurrentibus, vix confertis, latiusculis, gilvis. (Sporarum color ignotus).

On wood. Richmond River, N. S. W. (M. Hodgkinson).

Pileus 1 cm. broad. Stem 1-2 cm. high, 1 mm. thick. Rather an aberrant *Pleurotus*, but the pileus is not a good *Collybia*.

Agaricus (*Pleurotus*) imberbis, Kalch.

Dimidiato-sessilis, reniformis, membranaceus, horizontalis, convexo-planus, glaber, cum lamellis vix confertis, ramosis, albidus, siccitate rugosulus, alutaceus. Sporæ breviter ovatae (007×005 mm.)

On wood. Richmond River. (M. Hodgkinson). Dividing Range. (*Berggren*, 419).

Pileus 2-4 lines broad. Near *Ag. limpidus*, Fr.

Agaricus (*Pleurotus*) abbreviatus, Kalch.

Totus rufus. Pileus excentricus, convexo-planus, margine involutus, lævis, glaber; stipes diametro pileo brevior, sursum deorsumve leviter incrassatus; lamellæ plano-adnatæ, angustæ, confertæ.

On wood. Richmond River, N. S. W. (M. Hodgkinson).

Pileus 2-3 lines broad. Stem 2 lines long, $\frac{1}{2}$ line thick.

Agaricus (*Inocybe*) gomphodes, Kalch.

Pileus carnosulus, campanulatus, vertice gompho-globoso ornatus, fibrillosus, fuscescens; stipes farctus, subæqualis, basi bulbillosus, ibidemque mycelio albo incrassatus, ceterum rufo-pallidus; lamellæ adscendentes, subliberæ, confertæ, lineares, angustæ, strictæ, griseo-umbrinæ.

Richmond River, N. S. W.

Pileus $\frac{3}{4}$ inch high and broad. Stem 2 inches long, $1\frac{1}{2}$ l. thick. The apex of the pileus, occupied by a nodule the size of a pea, is very distinctive.

Agaricus (*Naucoria*) nasutus, Kalch.

Pileus tenuis, carnosulus, umbone papillæformi elongato instructus, ad marginem sulcatus, glaber, ochraceus; stipes fistulosus, æqualis, tortuosus, fibrillosus, subferrugineus; lamellæ emarginatæ, denticulo decurrentes, subconfertæ, latæ, ventricosæ, ferrugineæ.

Richmond River, N. S. W.

Pileus $\frac{1}{2}$ inch and more broad. Stem 2 inches long 1 line thick, umbo prominent, becoming reddish.

Coprinus murinus, Kalchb.

Pusillus. Pileus submembranaceus, conico-campanulatus (vix 1 cm. altus), vertice papilla eminente instructus, passim floccis albis, sat persistentibus adpersus, vix striatus, griseus; stipes curtus (1-3 cm.) tenuis, sursum leviter attenuatus, altus; lamellæ latiusculæ, nigræ.

Richmond River. (Mücller).

Allied to *C. coopertus*, Fr., but differs in the papillæ, opaque, somewhat pulverulent, not micaceous, pileus.

Hygrophorus scarlatinus, Kalchb.

Pygmæus. Pileus carnosulus, convexus, obtusissimus ($\frac{1}{2}$ unc. latus), lævis, glaber, margine inflexus, pulchre scarlatinus; stipes cavus (1 cm. long, 1-2 mm. crassus) albo-roseus; lamellæ adnatæ,

subdistantes, crassiusculæ, roseæ. Trama floccoso-granulosa. Sporæ subglobosæ ($\cdot 003\text{--}\cdot 004$ mm.) glabræ, achroæ.

Rockhampton. (Müeller.)

Marasmius minutissimus, Müell.

Pileus vix seminum *Sinapis* magnitudine, subglobosus, fuscescens. Stipes capillaris, institius (2 lin. altus) ad apicem albo-pulverulentus, ceterum glaber, nigricans. Lamellæ paucæ, ob minutiem fungillo vix observandæ.

In ramulis. Richmond River. (Müeller.)

Marasmius pilopus, Kalchb.

E. scorteis. Pileus coriaceo-membranaceus, subdiaphanus, convexus, obtusus, vel centro depressus (vix 1 unc. latus), totus radiatum striatus, gilvo-pallescent. Stipes e farcto-cavus (1-2 unc. longus, 1 lin. et ultra crassus), basi bulbillosus, totus tomento pulveraceo, fulvo-ochraceo, dense vestitus, lamellæ adnatæ, postice latissimæ, ambitum versus sumopere angustatæ, distantes ramosæ, acie integræ, siccando carneo-rufæ, pileo obscuriores. Sporæ ovals minutæ ($\cdot 0025 \times \cdot 0015$ mm.).

In lignis. Richmond River. (Müeller.)

This curious species has no immediate allies. It is altogether a peculiar type.

Marasmius crinis-equi, Müeller.

Albido-fulvescens, minimus. Pileo raro, membranaceo, convexo, obtuso (1-2 mm. lato). Stipite (1 cm. et ultra long), setaceo, rigido, atro, nitido, e mycelio atro, equi crinis similari, assurgente, Lamellæ paucæ, distantæ, pileo pallidiores.

Surrounding twigs. (Müeller.)

A very curious species. The rhizomorphoid mycelium resembles horsehair, and is profusely developed, whilst the pilei are very seldom produced. The stems rise at right angles from the decumbent mycelium. The only perfect specimens are in the Berkeley Herbarium, Royal Gardens, Kew.

Lentinus fusco-purpureus, Kalchb.

Pileus coriaceus, infundibuliformis, margine reflexo, strigoso hirsutus, fusco-purpureus; stipes elatus, sub-æqualis, dense setulosus, pileo sub-concolor; lamellæ vix confertæ, parce anastomosantes, pileo pullidiores.

Richmond River. (Müeller.)

Pileus $2\text{--}2\frac{1}{2}$ in. broad, 3-4 in. high. Allied to *L. Zeyheri*, Berk., but conspicuously different.

Lentinus læviceps, Kalchb.

Pileus carnosio-coriaceus, convexo-planus depressusve, lævis, glaber, albo-flavus; stipes solidus, deorsum attenuatus, basi squamosus, lamellæ decurrentes, crassæ, distantes, acie subintegræ.

Australia. (Müeller, No. 1044.)

Lentinus hyracinus, Kalch.

Sub hoc nomine distinguo fungum in Africa, Australi, primum lectum inter *L. ursinum*, Fr., et *L. castoreum*, Secr. medium, a priore lamellis eximie dentatis ab utroque pileis nec aurito ascen-

dentibus, nec ligulatis diversum. Pileus subsessilis, orbicularis, vel semi-orbicularis, horizontalis, in basin stipitiformem contractus (1-2 cm. longus latusque), postice rugulosus subtomentosus, rufofuscus. Lamellæ latiusculæ, dentatæ, pallidiores.

Richmond River. (Müller.)

Not comparable with *L. vulpinus*, Fr.

Xerotus papuasius, Kalchb.

Subcæspitosus, glaber, alutaceo-ochraceus. Pileo membranaceo-coriaceo, convexo, vertice profunde depresso, margine deflexo, radiatim sulcato; stipite e farcto fistuloso, deorsum leviter incrassato, albo pulverulento; lamellis adnato-decurrentibus, strictis, vix ramosis, integris.

In corticis. Richmond River. (M. Hodgkinson.)

Pileus $\frac{1}{2}$ -1 in. broad, stem 1-2 in. high, 1-2 lines thick. Allied to *X. Rawnaensis*, P. and *X. caribæus*, Plum.

Lenzites torrida, Kalchb.

Tota alba. Pileus compactus, lignosus, dimidiatus, umbonato-sessilis, concentricè sulcatus, margine obtusus, subtiliter tomentosus. Lamellæ rigidæ, distantes, dichotomæ, et anastomosantes, acie obtusæ, crenulatæ, vel singulari modo scruposæ.

On wood. Richmond River. (Müller.)

Pileus 2-2 $\frac{1}{2}$ in. broad, $\frac{1}{2}$ in. and more thick.

DACRYMYCES SUCCINEUS, FR., THE EARLY STAGE OF A PEZIZA.

By W. PHILLIPS, F.L.S.

Fries placed *Dacrymyces succineus* in the first instance amongst the Discomycetes as *Calloria succineus* in his *Summa Vegetabilium Scandinaviæ* (p. 359), and adds after his description, "Structuream *P. fusarioides*, Berk. exhibit," but in his *Hymenomycetes Europæi* he removes it to *Dacrymyces*. Herr Fuckel, in his *Symbolæ Mycologicæ* (p. 282), says that he found frequently associated with this translucent amber *Dacrymyces*, similar ones in form of little cups, containing threads filled with globules, which he suspected might be unripe asci. He was not able to distinguish the structure satisfactorily, but he evidently suspected an ascigerous condition of the *Dacrymyces*. The Rev. J. Keith sent me specimens of the *Dacrymyces* from Forres, some time since, which contained the characteristic cylindrical spores only; last year, however, my friend, Mr. C. B. Plowright, while botanising with some of the members of the Cryptogamic Society of Scotland, in the productive woods near Forres in the autumn, found on the decaying pine leaves the most perfect form mentioned by Fuckel in which the sporidia are fully developed. There can hardly be a doubt, on examining the progressive forms associated together on the same pine branch, that the *Dacrymyces* passes into the *Peziza*. It is as obvious an instance of dimorphism as that of *Dacrymyces*

Urticæ and *Peziza fusarioides* B, and rests on similar evidence. The *Peziza* may be thus described—*Peziza electrina*, Ph. and Pl. n.s. Gregarious, minute, subgelatinous, glabrous, amber-coloured, disc concave, marginate; stem rather short, firm; asci narrowly clavate, pointed at the summit; sporidia 8, biseriate, cylindraceo-fusiform, $\cdot 005 \times \cdot 001$. mm.

On decaying leaves of *Pinus sylvestris*, Forres, N.B. intimately associated with *Dacrymyces succineus*, Fr. The cups are $\cdot 1\text{--}\cdot 5$ mm. across, paler on the margin; the stem is generally darker at the base.

NOTICE TO BRYOLOGISTS.—The undersigned takes the liberty of informing all botanists that henceforth, instead of Mr. Limpricht, he is charged with the account of Bryology for the "Botanische Jahresbericht," edited by Dr. Just. Therefore he begs the Bryologists to favour him with transmitting their respective Treatises.

Weilburg (Germany), 1879.

Dr. KIENITZ-GERLOFF.

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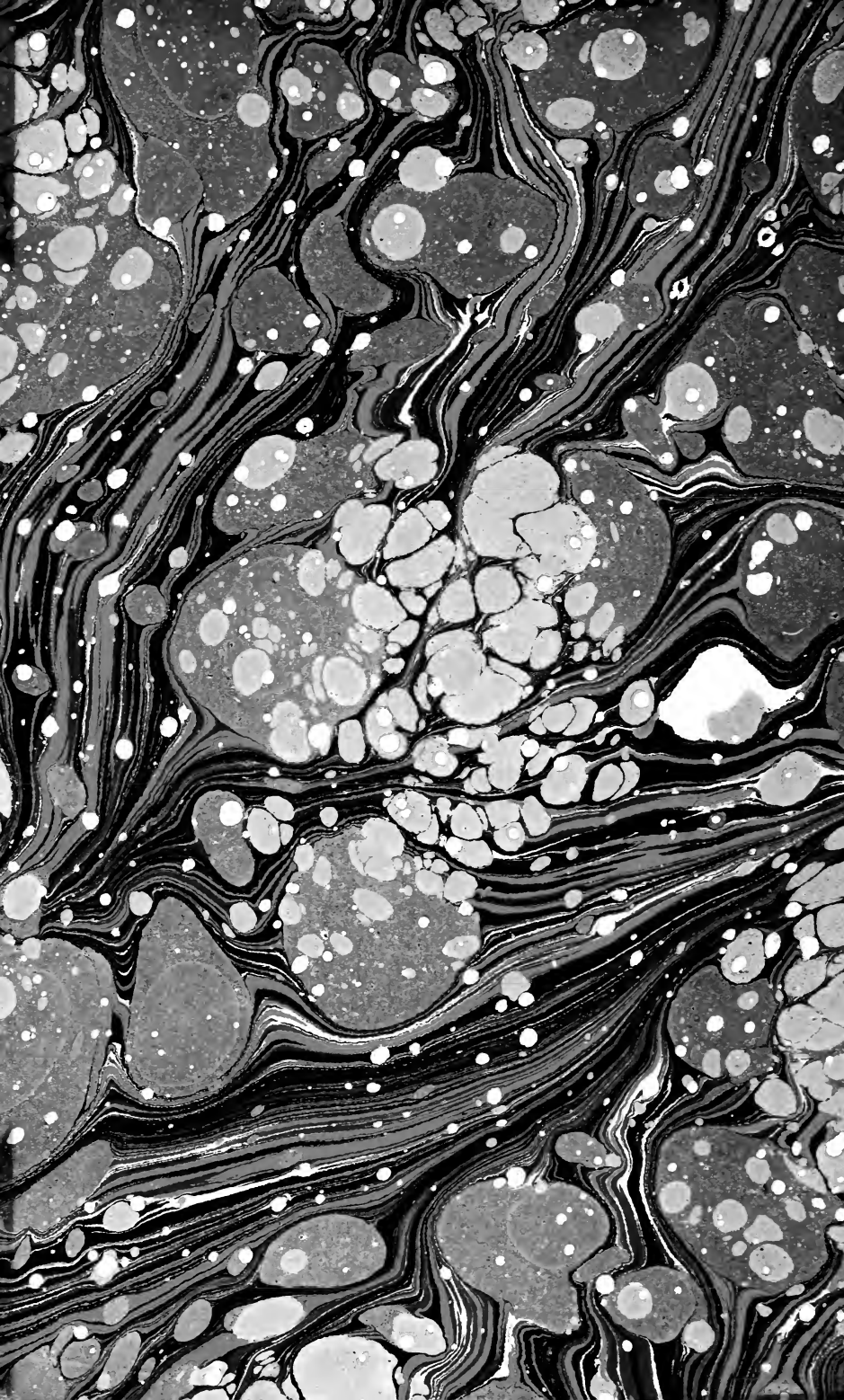
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